# *USER'S MANUAL*

# *of*

# *Intel 945GM Express Chipset*

# *&*

# *Intel FW82801GBM ICH Chipset*

# *Based*

# *M/B For Socket479 Mobile Processor*

***NO. G03-9F2-F***

***Rev：3.0***

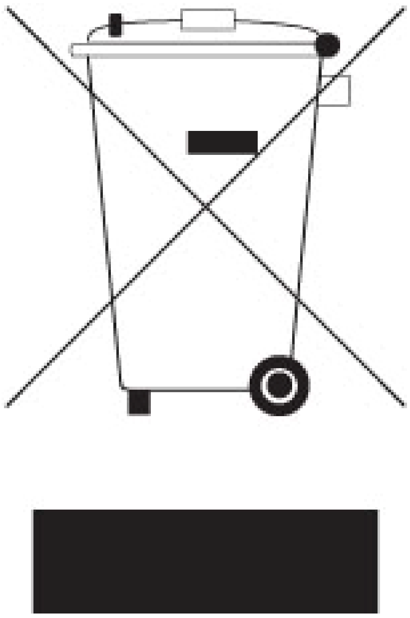
**Release date: July 2007**

**Trademark:**

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## Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



# TABLE OF CONTENT

## USER’S NOTICE



**THIS MANUAL CONTAINS ALL INFORMATION REQUIRED TO USE INTEL 945GM CHIPSET MOTHER-BOARD SERIES AND WE DO ASSURE THIS MANUAL MEETS USER’S REQUIREMENT BUT WILL CHANGE, CORRECT ANY TIME WITHOUT NOTICE. MANUFACTURER PROVIDES THIS MANUAL “AS IS” WITHOUT WARRANTY OF ANY KIND, AND WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTIAL OR CONSEQUENTIAL DAMAGES (INCLUDING DAMANGES FOR LOSS OF PROFIT, LOSS OF BUSINESS, LOSS OF USE OF DATA, INTERRUPTION OF BUSINESS AND THE LIKE).**

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## Manual Revision Information

| Reversion | Revision History | Date |
|---|---|---|
| 3.0 | Third Edition | July 2007 |

## Item Checklist

- ☑ Intel 945GM Express Chipset Based Motherboard
- ☑ Cable for IDE and Serial ATA2 IDE Port
- ☑ Space-support holders and screws
- ☑ CD for motherboard utilities
- ☐ Cable for IEEE1394 and USB2.0 (Option)
- ☐ Cable for HDTV-Out (Option)
- ☐ Cable for PS / 2 Keyboard & Mouse(Option)
- ☐ Active thermal kit (Option)
- ☑ Intel 945GM Express Chipset Based Motherboard User’s Manual

## Intel Mobility Processor Family Cooling Solutions

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly crucial when building computer systems. Maintaining the proper thermal environment is key to reliable, long-term system operation. The overall goal in providing the proper thermal environment is keeping the processor below its specified maximum case temperature. Heat sinks induce improved processor heat dissipation through increased surface area and concentrated airflow from attached fans. In addition, interface materials allow effective transfers of heat from the processor to the heatsink. For optimum heat transfer, Intel recommends the use of thermal grease and mounting clips to attach the heatsink to the processor.
When selecting a thermal solution for your system, please refer to the website below for collection of heat sinks evaluated and recommended by Intel for use with Intel processors. Note, those heat sinks are recommended for maintaining the specified Maximum T case requirement. In addition, this collection is not intended to be a comprehensive listing of all heat sinks that support Intel processors.

For vendor list of heatsink and fan, please visit:
http://developer.intel.com/products/processor/core2duo/index.htm

# Chapter 1

## Introduction of Intel 945GM Express Chipset Motherboards

## 1-1 Feature of motherboard

The Intel 945GM chipset motherboard series are based on the latest Intel 945GM Express Chipset and Intel FW82801GBM ICH Chipset technology which supports the socket 479m compatible innovative 65nm Core 2 Duo and Core Solo series, 90nm Dual-Core Intel® Core Duo series and Intel® Celeron M Processor with Intel® Hyper-Threading Technology. The motherboard is optimized to deliver innovative features and professional desktop platform solution with the advantages of the new generation dual core processor for those who demand the best experience of personal computing.

The Intel 945GM Express chipset motherboard series for Intel® Core 2 Duo® Mobile Processor are absolutely the cost-effective solution for industrial computing applications, and it also meets the demanding usage of computing of multimedia entertainment and business applications. Moreover, the Intel 945GM express chipset incorporates Intel Graphics Media Accelerator 950 which supports the Microsoft* DirectX* 9.0c, Vertex Shader 3.0 and Transform and Lighting provides incredible visual quality, faster graphics performance and flexible display options without the need for a separate graphics card.

The motherboards implement Intel 945GM Express Chipset which supports Front Side Bus 667/533 MHz of data transferring and offers with 333 / 266 MHz memory clock frequency for Dual channel DDR2 667 / 533 MHz memory DIMMs which are expandable to 2.0GB to double the performance of memory access. The motherboard is embedded with ICH7M chipset of providing one parallel Ultra ATA 100 interface for two IDE drives and two serial ATA2 interface of 3.0Gb / s data transfer rate for two serial ATA devices.

The motherboards offer one 32-bit PCI and one Mini-PCI slots guarantee the rich connectivity for the I/O of peripherals. One optional Mini-PCI Express x1 I/O slot offers 512Mbyte/sec concurrently bandwidth which is over 3.5 times than 32-bit PCI at 133Mbye/sec; the motherboards are designed of tackling the future requirements of industrial computing.

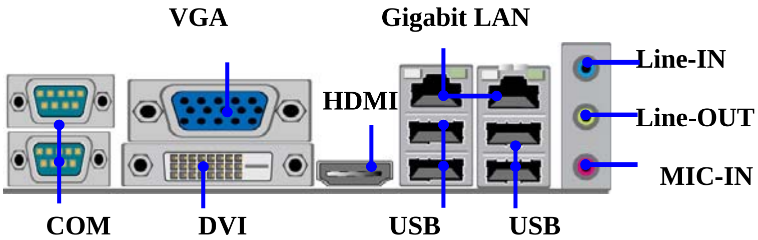
The motherboards provide dual 10 / 100 / 1000 Ethernet compatible LAN function by using the Realtek RTL8111B Gigabit LAN NIC which supports 10M / 100M / 1000M data transfer rate. The motherboard series also have an integrated 6-channel High Definition Audio Codec on board which is fully compatible with Sound Blaster Pro® that gives you the best sound quality and compatibility.

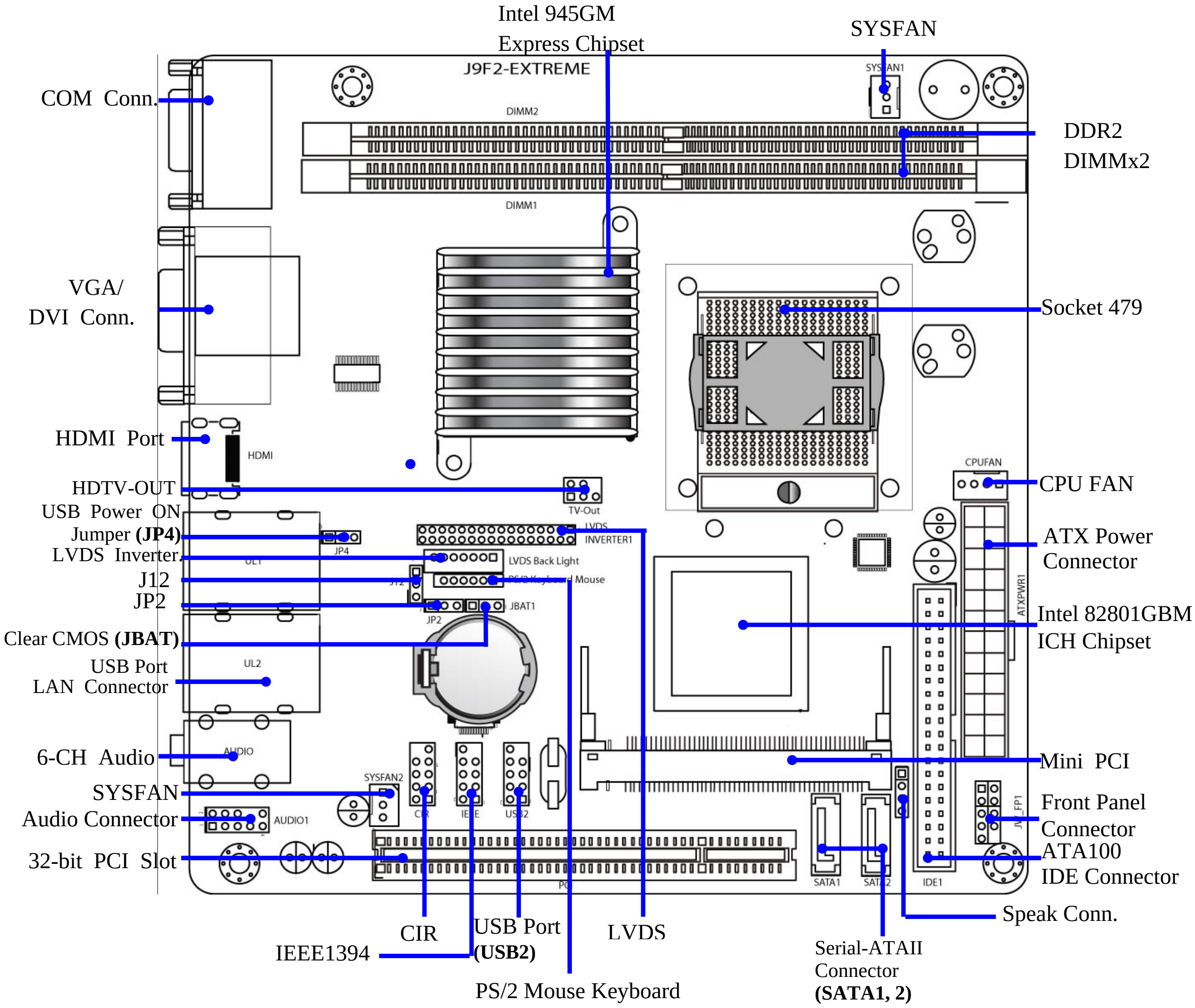
Embedded USB and optional VIA 6307 IEEE1394 controllers as well as capability of expanding to 6 of USB 2.0 functional ports and 1 of IEEE1394 9-pin block delivering 480Mb/s and 400 Mb/s bandwidth of rich connectivity, these motherboards meet the future USB demands which are also equipped with hardware monitor function on system to monitor and protect your system and maintain your non-stop business computing.

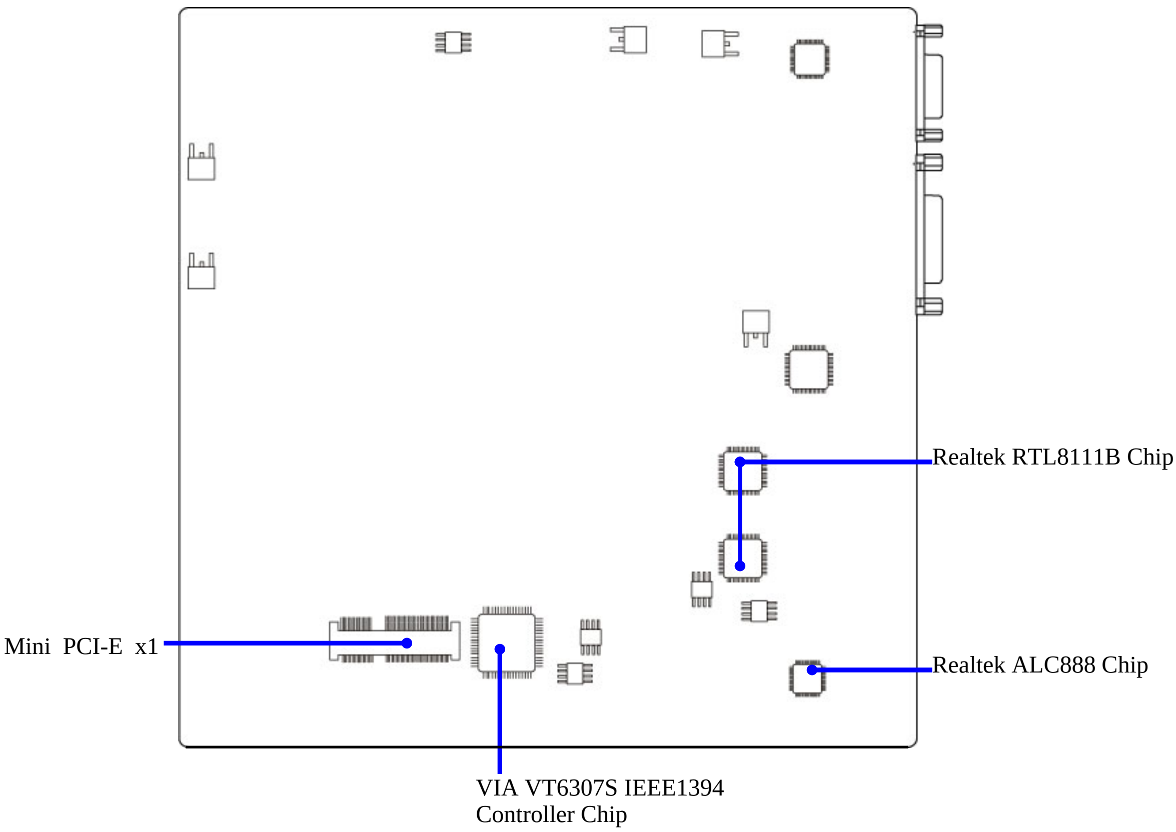
## 1-2 Specification

| Spec | Description |
|---|---|
| **Design** | * Mini ITX form factor 6 layers PCB size: 17.0x17.0cm |
| **Chipset** | * Intel 945GM Memory Controller Hub (MCH) Chipset<br>* Intel 82801GBM I/O Controller Hub (ICH7M) Chipset |
| **CPU Socket (Socket 479)** | * Support Intel Core 2 Duo ,Core Duo , Core Solo, Celeron M Mobile Socket 479m Processors<br>* Support FSB Frequency 667 / 533MHz |
| **Memory Socket** | * 240-pin DDR2 RAM module socket x 2<br>* Support Dual channel DDR2 667 / 533 MHz RAM Module and which is expandable to 2.0GB. |
| **Integrated VGA** | * Integrated Graphic Media Accelerator 950<br>* 256-bit graphics core running at 400MHz<br>* 1.6 GPixels/sec and 1.6 GTexels/sec fill rate<br>* Up to 224 MB maximum video memory |
| **Expansion Slots** | * 32-bit PCI slot x 1pcs<br>* 32-bit Mini PCI slot x 1pcs<br>* Optional Mini PCI-E x1 slot deliver up to 512MB/s concurrent bandwidth |
| **Integrate IDE and Serial ATA2** | * One PCI IDE controller that supports PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 33/66/100 functions that deliver the data transfer rate up to 100 MB/s; two Serial ATA2 ports provide 3.0 Gb /sec data transfer rate. |
| **LAN** | * Integrated Dual Realtek RTL8111B PCI-E 10 / 100 / 1000 LAN.<br>* Support Fast Ethernet LAN function of providing 10Mb/100Mb/1000 Mb/s data transfer rate |
| **Audio** | * Realtek ALC888 High Definition Audio Codec integrated<br>* Audio driver and utility included |
| **BIOS** | * Award 4MB SPI Flash ROM |
| **Multi I/O** | * DVI port x1<br>* HDMI port x1<br>* Serial port x2<br>* D-Sub 15-pin VGA Conn.x1<br>* LVDS connector x1<br>* CIR(Consumer IR) header x1 (Option)(Need to purchase Optional IR receiver and Remote control)<br>* HDTV-OUT header x1<br>* 6-Pin PS2 Keyboard/Mouse header<br>* USB 2.0 connector x 4, headers x2 (connecting cable option)<br>* 6-channel Audio connector (Line-in, Line-out, MIC-In/ 6CH Audio) |
| **IEEE1394** | * Integrated VIA VT6307S 1394 controller<br>* Compliant with IEEE 1394a-2000 standard, support 400Mbit/s data transfer rate. |

## 1-3 Layout Diagram & Jumper Setting




Realtek RTL8111B Chip
Mini PCI-E x1
Realtek ALC888 Chip
VIA VT6307S IEEE1394
Controller Chip

| Jumper | Name | Description | Page |
|---|---|---|---|
| JP4 | USB Power On Function Setting | 3-pin Block | p.5 |
| JBAT | CMOS RAM Clear Function Setting | 3-pin Block | p.6 |
| JP2/ J12 | LVDS Function Setting | 3-pin Block | p.6 |

## *Connectors*

| Connector | Name | Description | Page |
|---|---|---|---|
| ATXPWR | ATX Power Connector | 24-pin Block | p.10 |
| UL1/UL2 | USB/ LAN  Port Connector | RJ45 + 2 USB | p.10 |
| COM1/COM2 | Serial Port Connector | 9-pin Female | p.10 |
| VGA | VGA Port Connector | 15-pin Female | p.12 |
| DVI | Digital Video Interface Connector | 24-pin Connector | p.11 |
| HDMI | High Definition Media Interface Connector | Connector | p.12 |
| Line-In/Out, MIC-In | Line-Out/Line-In/MIC-In Audio Connector | Phone Jack | p.11 |
| IDE1 | Primary Connector | 40-pin Block | p.12 |
| SATA1/2 | Serial ATA IDE Connector | 7-pin Connector | p.12 |

## *Headers*

| Header | Name | Description | Page |
|---|---|---|---|
| AUDIO | Line-Out/MIC output Header | 4-pin Block | p.12 |
| USB2 | USB2.0 Port Headers | 9-pin Block | p.12 |
| IEEE1394 | 1394 Port Headers | 9-pin Block | p.13 |
| HD_LED | Hard Disk LED connector | 3-pin Block | p.13 |
| RESET | Reset switch lead | 2-pin Block | p.13 |
| SPEAK | Speaker connector | 4-pin Block | p.13 |
| PWR LED | Power LED Headers | 2-pin Block | p.13 |
| PWR BTN | Power Button Headers | 2-pin Block | p.14 |
| CPUFAN, SYSFAN1/2 | FAN Speed Headers | 3-pin Block | p.14 |
| CIR（Option） | Consumer IR header | 9-pin Block | p.15 |
| LVDS | LVDS Connector | 32-pin Block | p.145 |
| HDTV-OUT | HDTV-OUT header | 5-pin Block | p.14 |
| PS2KB/MS | PS/2 Mouse & PS/2 Keyboard Connector | 6-pin Block | P.13 |
| LVDS Inverter | LVDS Inverter Connector | 30-pin Block | p.15 |

## *Expansion Sockets*

| Socket/Slot | Name | Description | Page |
|---|---|---|---|
| DDR2 | DDR2 SDRAM Module Socket | 240-pin DDR2 SDRAM Module Expansion Socket | p.9 |
| PCI1 | PCI Slot | 32-bit PCI Local Bus Expansion slots | p.9 |
| Mini PCI | Mini PCI Slot | 32-bit PCI Local Bus Expansion slots | p.9 |
| Mini PCI-E 1X | Mini PCI-E x1 Slot | PCI-E x1  Local Bus Expansion slots | p.9 |

# Chapter 2

# Hardware installation

## 2-1 Hardware installation Steps

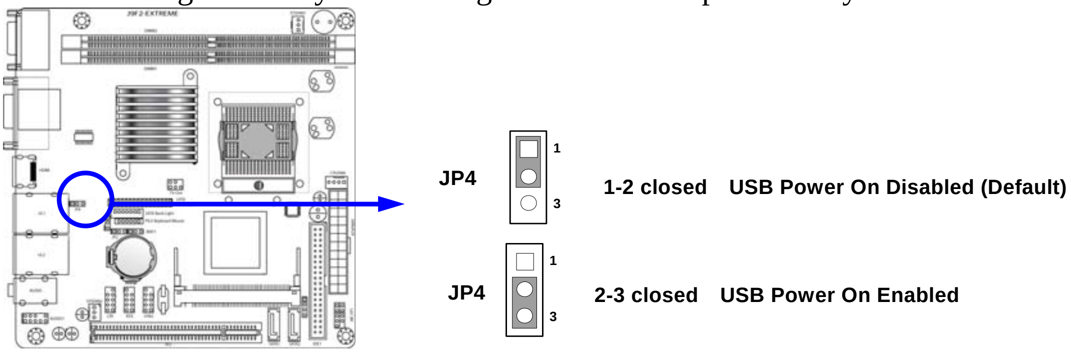
Before using your computer, you had better complete the following steps:

1. Check motherboard jumper setting
2. Install CPU and Fan
3. Install System Memory (DIMM)
4. Install Expansion cards
5. Connect IDE and Floppy cables, Front Panel /Back Panel cable
6. Connect ATX Power cable
7. Power-On and Load Standard Default
8. Reboot
9. Install Operating System
10. Install Driver and Utility

## 2-2 Checking Motherboard's Jumper Setting

**(1) USB Power On function Enabled/Disabled (3-pin): JP4**

When setting Enabled you can using USB Device to power on system.




**(2) CMOS RAM Clear (3-pin): JBAT**

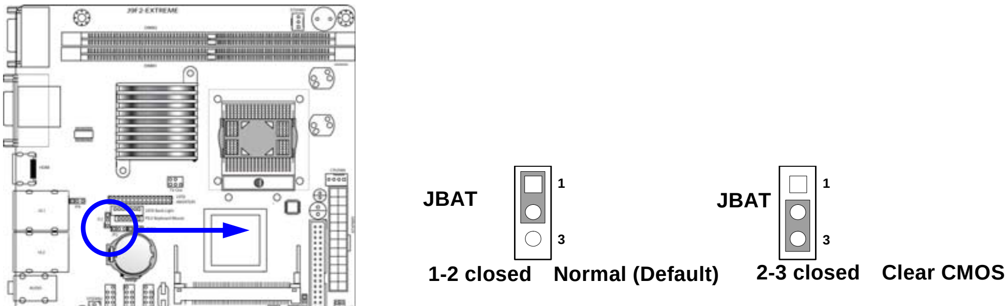
A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JPAT to store the CMOS data.

To clear the CMOS, follow the procedure below:

1. Turn off the system and unplug the AC power
2. Remove ATX power cable from ATX power connector
3. Locate JBAT and short pins 2-3 for a few seconds
4. Return JBAT to its normal setting by shorting pins 1-2
5. Connect ATX power cable back to ATX power connector

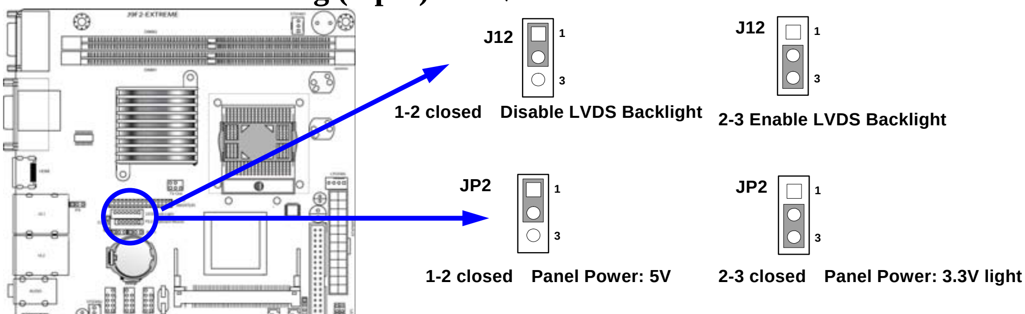
***Note: When should clear CMOS***

1. ***Troubleshooting***
2. ***Forget password***
3. ***After over clocking system boot fail***




**CMOS RAM Clear Setting**

**(3) LVDS Function Setting (3-pin): J12 / JP2**




**LVDS Function Setting**

## 2-3 Glossary

**Chipset (core logic)** - two or more integrated circuits which control the interfaces between the system processor, RAM, I/O devises, and adapter cards.

**Processor socket** - the socket used to mount the system processor on the motherboard.

**Slot** (AGP, PCI, ISA, RAM) - the slots used to mount adapter cards and system RAM.

**PCI** - **P**eripheral **C**omponent **I**nterconnect - a high speed interface for video cards, sound cards, network interface cards, and modems; runs at 33MHz.

**Serial Port -** a low speed interface typically used for mouse and external modems.

**Parallel Port** - a low speed interface typically used for printers.

**PS/2** - a low speed interface used for mouse and keyboards.

**USB** - **U**niversal **S**erial **B**us - a medium speed interface typically used for mouse, keyboards, scanners, and some digital cameras.

**Sound** (interface) - the interface between the sound card or integrated sound connectors and speakers, MIC, game controllers, and MIDI sound devices.

**BIOS** (**B**asic **I**nput/**O**utput **S**ystem) - the program logic used to boot up a computer and establish the relationship between the various components.

**Driver** - software, which defines the characteristics of a device for use by another device or other software.

**Processor** - the "Central Processing Unit" (CPU); the principal integrated circuit used for doing the "computing" in "personal computer"

**Front Side Bus Frequency -** The working frequency of the motherboard, which is generated by the clock generator for CPU, DRAM and PCI BUS.

**CPU L2 Cache -** The flash memory inside the CPU, normally Pentium III CPU has 256K or above, while Celeron CPU will have 128K.

## 2-3-1 Setting CPU Bus Clock & Memory Clock Jumper

**Setting the front side bus frequency and SDRAM frequency**

The motherboard uses jumper less function for the front side bus frequency and SDRAM frequency users don't need setting any jumper when plug the CPU in motherboard

***For experience user looking for over clocking possibility, please refer to sec 2-3-2.***

## 2-3-2 Over clock Running

**WARNING!** This section is for experienced motherboard installer only. Over clocking can result in system instability or even shortening life of the processor.

Users can choose over clock running by BIOS CMOS SETUP UTILITY. When you entered CMOS SETUP UTILITY, choose "Miscellaneous Control" you will see the screen as below then.

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                           Miscellaneous Control

  Auto Detect PCI Clock          Enabled        |        Item Help
  Spread Spectrum                Disabled       |
  ** Current Host Clock          100MHZ         |  Menu Level >
  Host Clock at Next Boot        100MHZ         |
  ** Current DRAM CLOCK          266MHz **      |
  DRAM Clock at Next Boot        266MHz(By SPD) |
  VDIMM Select                   1.90V(Default) |
   VAGP Select                   1.55V(Default) |

 ↑↓→← Move Enter:Select Item +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
        F5:Previous Values  F6:Optimized Defaults F7:Standard Defaults
```

**WARNING!** The Design of this motherboard follows chipset and CPU vender's design guideline. Any attempts to push beyond product specification are not recommended and you are taking your own risk to damage your system or important data. Before over clocking, you must make sure your components are able to tolerate such abnormal setting, especially CPU, memory, hard disks, and VGA cards.

## 2-4 Install Memory

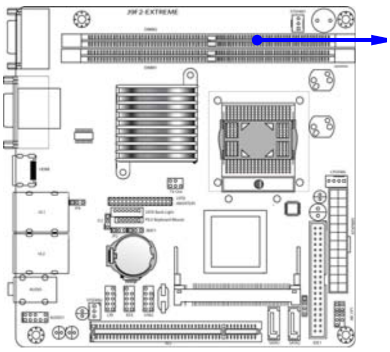
This motherboard provides two 240-pin DDR DUAL INLINE MEMORY MODULES (DIMM) sides for DDR memory expansion available from minimum memory size of 64MB to maximum memory size of 2.0GB DDR SDRAM.

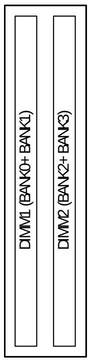
**Valid Memory Configurations**

| Bank | 240-pin DDR DIMM | PCS | Total Memory |
|---|---|---|---|
| Bank 0, 1 (DDR1) | DDRII667/DDRII 533 DDR DRAM Module | X1 | 64MB~1.0GB |
| Bank 2, 3 (DDR2) | DDRII667/DDRII553 DDR DRAM Module | X1 | 64MB~1.0GB |
| Total | System Memory (Max. 2.0GB) | X2 | 64MB~2.0GB |

Generally, installing DDR SDRAM modules to your motherboard is very easy, you can refer to figure 2-4 to see what a 240-pin DDR SDRAM module looks like.

****If only one memory MODULE is used, you should install it in the DIMM2 .**



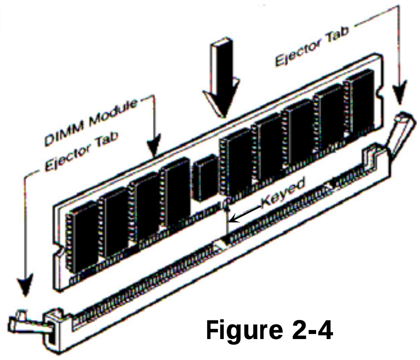




Figure 2-4

| | |
|---|---|
| **NOTE!** | When you install DIMM module fully into the DIMM socket the eject tab should be locked into the DIMM module very firmly and fit into its indention on both sides. |
| **WARNING!** | Duo to the DDR SDRAM CLOCK is set at 266 / 333MHz that uses only DDR2 667/533- compliant DDR Modules. When this motherboard operate at 166Mhz, most system will not even boot if non-compliant modules are used because of the strict timing issues, if your DDR Modules are not DDR2 667 / 533-compliant, set the SDRAM clock to 333MHz to ensure system stability. |

## 2-5 Expansion Cards

| | |
|---|---|
| **WARNING!** | Turn off your power when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards. |

### 2-5-1 Procedure For Expansion Card Installation

1. Read the documentation for your expansion card and make any necessary hardware or software setting for your expansion card such as jumpers.
2. Remove your computer's cover and the bracket plate on the slot you intend to use.

3. Align the card's connectors and press firmly.
4. Secure the card on the slot with the screen you remove above.
5. Replace the computer system's cover.
6. Set up the BIOS if necessary.
7. Install the necessary software driver for your expansion card.

# 2-6 Connectors, Headers

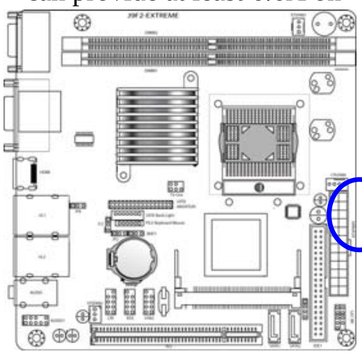
## 2-6-1 Connectors

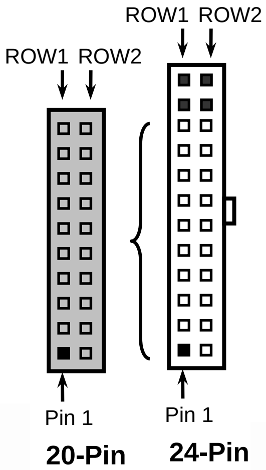
### (1) Power Connector (24-pin block) : ATXPWR

ATX Power Supply connector: This is a new defined 24-pins connector that usually comes with ATX case. The ATX Power Supply allows using soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.

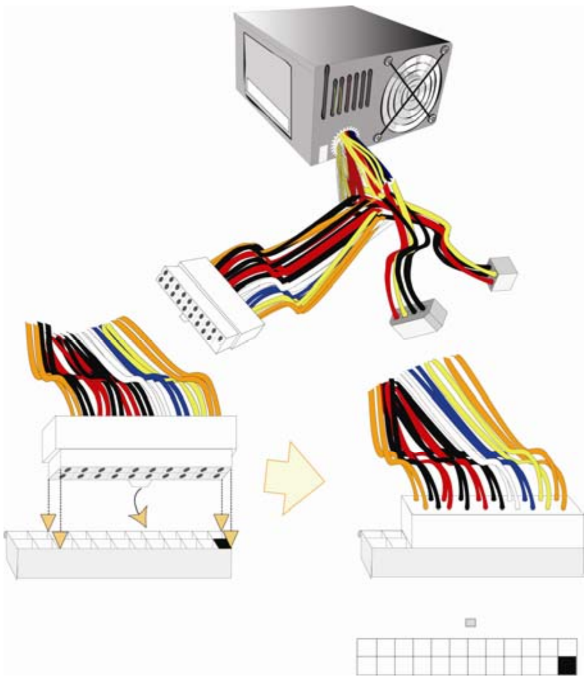
** We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU). This type has 24-pin and 4-pin power plugs.

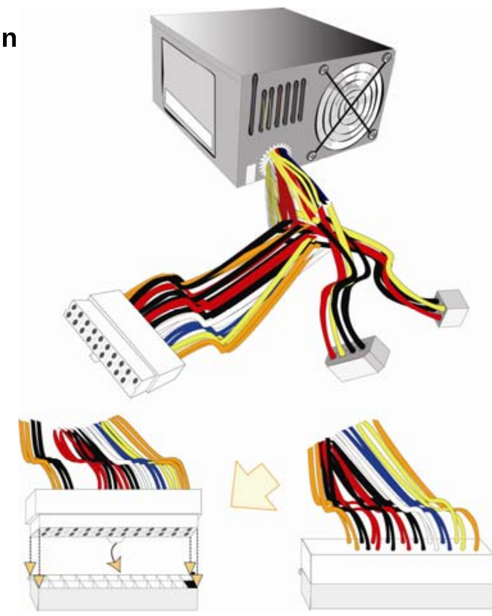
** If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 6.6A on +12V.






| PIN | ROW1 | ROW2 |
|---|---|---|
| 1 | 3.3V | 3.3V |
| 2 | 3.3V | -12V |
| 3 | GND | GND |
| 4 | 5V | Soft Power On |
| 5 | GND | GND |
| 6 | 5V | GND |
| 7 | GND | GND |
| 8 | Power OK | -5V |
| 9 | +5V (for Soft Logic) | +5V |
| 10 | +12V | +5V |
| 11 | +12V | +5V |
| 12 | +3V | GND |





**(2) USB Port connector: UL1/UL2**

The connectors are 4-pins connector that connect USB devices to the system board, and standard RJ45 connector for Network supports 10/100/1000 BASE-T transfer rate.

**(3) Serial Port Connector (9-pin female): COM1/COM2**

Serial Port connector is a 9-pin D-Subminiature connector. The On-board Serial Port can be disabled through the BIOS SETUP. Please refer to Chapter 3 "INTEGRATED PERIPHERALS SETUP" section for more detail information.

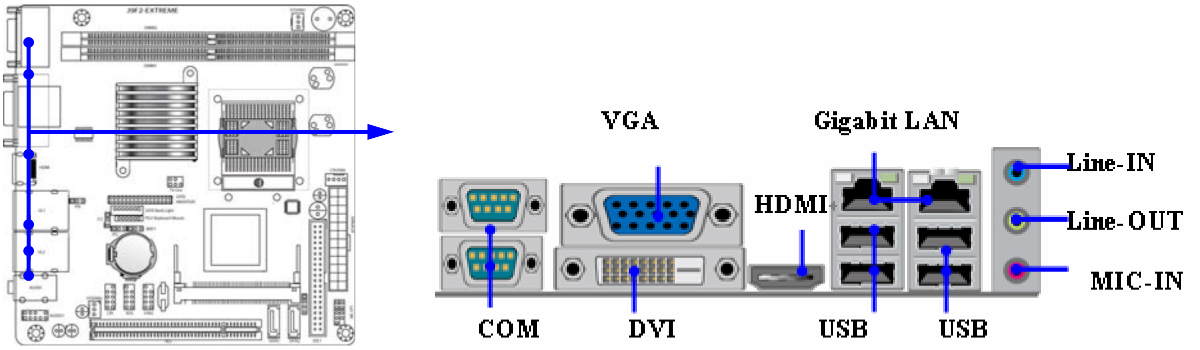
**(5) VGA Connector (15-pin female): VGA**

VGA Connector is a 15-pin D-Subminiature Receptacle connector.
This connector is for connection Monitor and System to display.

**(6) Audio Connector: (Line-Out/ Line-IN/ MIC-In)**

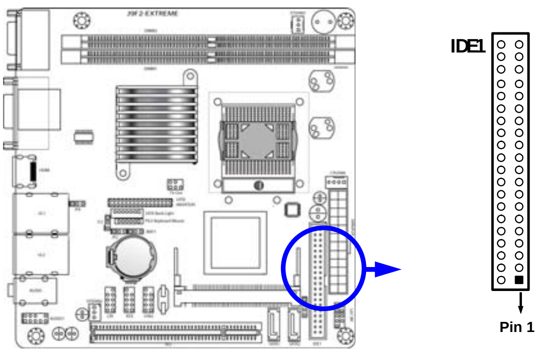
This Connector are 3 phone Jack for LINE-OUT/ LINE-IN/ MIC.

**Line-out :** Audio output to speaker
**Line-In :** Audio input to Audio controller
**MIC-In :** Microphone Connector




**(7) Primary IDE Connector (40-pin block): IDE1**

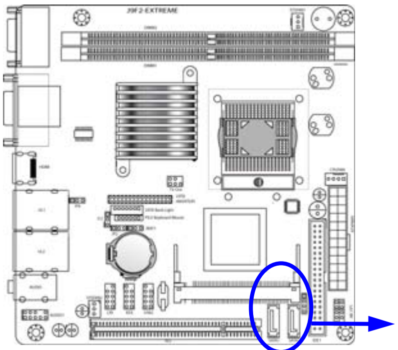
This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer to the documentation of your hard disk for the jumper settings.

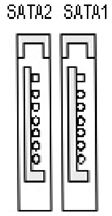



- Two hard disks can be connected to each connector. The first HDD is referred to as the "Master" and the second HDD is referred to as the "Slave".
- For performance issues, we strongly suggest you don't install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance on this channel maybe low.

**(8) Serial-ATA Port connector: SATA1 / SATA2**

This connector supports the provided Serial ATA IDE hard disk cable to connecting the motherboard and serial ATA hard disk.






**Serial-ATA Compatible Connectors**

**(9) DVI:** Digital Visual Interface

This interface standard designed to maximize the visual quality of digital display devices such as flat panel LCD computer displays and digital projectors.

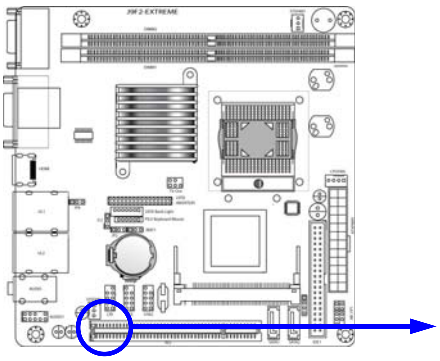
**(10) HDMI:** High-Definition Multimedia Interface

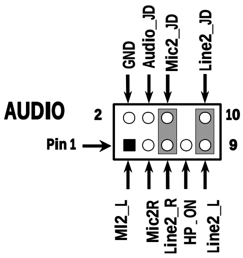
This point-to-point interface is for audio and video signals designed as a single-cable solution for home theater and consumer electronics equipment.

## 2-6-2 Headers

**(1) Line-Out, MIC-In Header (9-pin): AUDIO**

This header connects to Front Panel Line-out, MIC-In connector with cable.

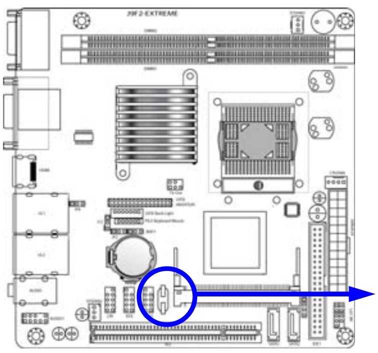


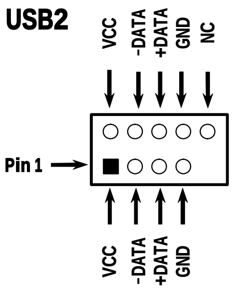



**Line-Out, MIC Headers**

**(2) USB Port Headers (9-pin) : USB2**

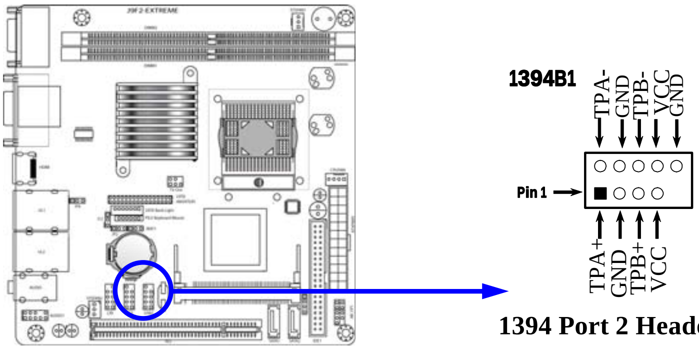
These headers are used for connecting the additional USB port plug. By attaching an option USB cable, your can be provided with two additional USB plugs affixed to the back panel.






**USB Port Headers**

**(3) 1394 Port 2 Headers (9-pin) : 1394B1**




1394 Port 2 Headers

**(4) IDE Activity LED: HD_LED**

This connector connects to the hard disk activity indicator light on the case.

**(5) Reset switch lead: RESET**

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the lift of the system's power supply. See the figure below.

**(6) Speaker connector: SPEAK**

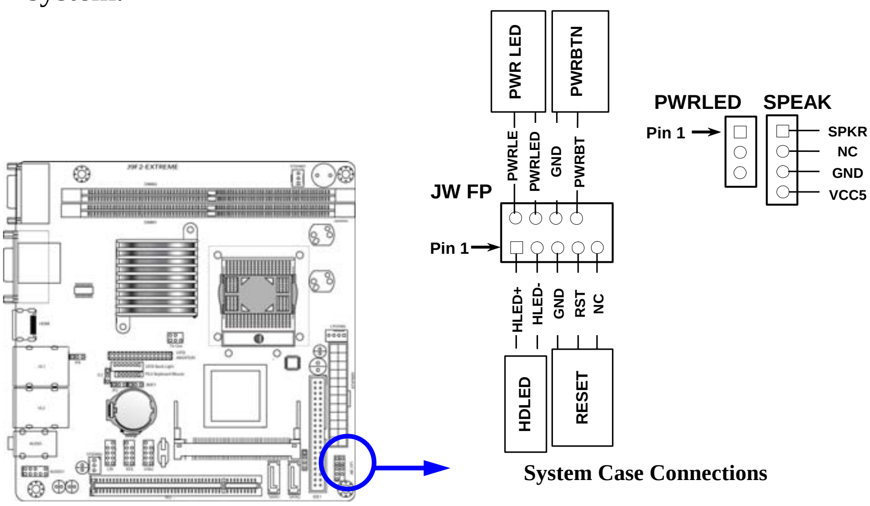
This 4-pin connector connects to the case-mounted speaker. See the figure below.

**(7) Power LED: PWR LED**

The Power LED is light on while the system power is on. Connect the Power LED from the system case to this pin.

**(8) Power switch: PWR BTN**

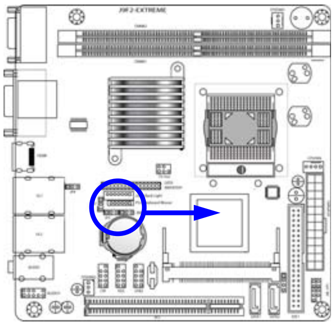
This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system.

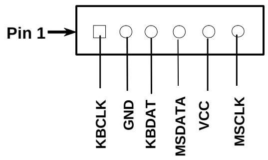



System Case Connections

**(9) PS/2 Mouse & PS/2 Keyboard Connector: PS2KBMS**

The connectors are for PS/2 keyboard and PS/2 Mouse input devices.

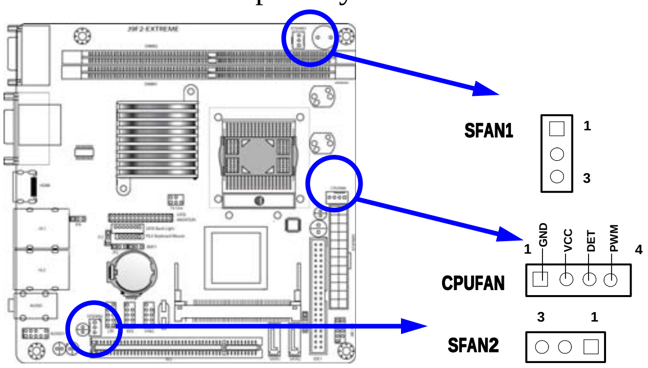





**PS/2 Keyboard Mousse Headers**

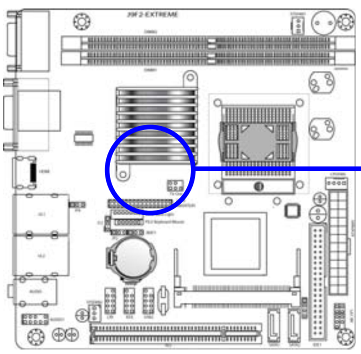
### (10) FAN Speed Headers (3-pin) : CPUFAN, SFAN1/SFAN2

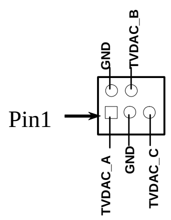
These connectors support cooling fans of 350mA (4.2 Watts) or less, depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of connector.




### (11) HDTV-OUT Header

HDTV-OUT is the 5-pin block pin-header. HDTV-out is commonly used to label the connector of equipment offering an analog video signal that is acceptable for a HD television AV input.

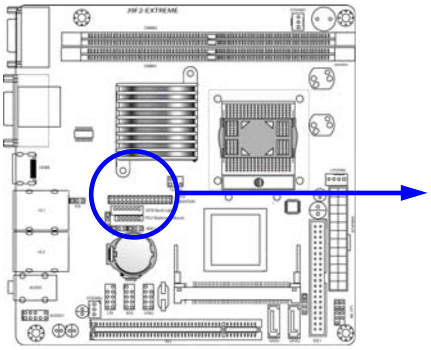




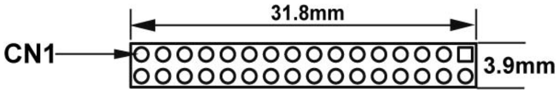

**HDTV-OUT Conn. 5-pin Block**

## (12) LVDS Pin-Headers: LVDS

These Headers can connect with the LVDS devices.

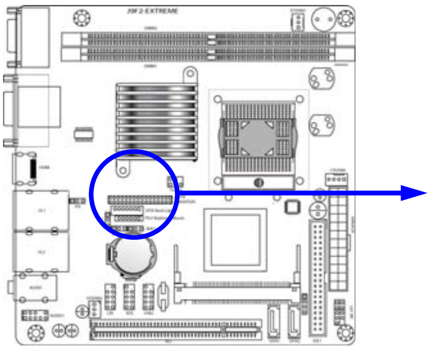


LVDS Headers

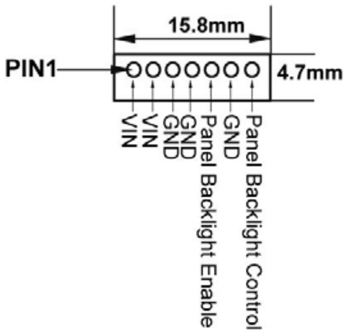



| PIN No. | Symbol | PIN NO. | Symbol |
|---|---|---|---|
| 1 | NC | 2 | NC |
| 3 | CK2IN- | 4 | CK2IN+ |
| 5 | R2IN2- | 6 | R2IN2+ |
| 7 | R2IN1- | 8 | R2IN1+ |
| 9 | R2IN0- | 10 | R2IN0+ |
| 11 | LVDS_DDC_DATA | 12 | LVDS_DDC-CLK |
| 13 | GND | 14 | GND |
| 15 | GND | 16 | GND |
| 17 | NC | 18 | NC |
| 19 | CK1IN- | 20 | CK1IN+ |
| 21 | R1IN2+ | 22 | R1IN2- |
| 23 | R1IN1+ | 24 | R1IN1- |
| 25 | R1IN0+ | 26 | R1IN0- |
| 27 | VDD | 28 | VDD |
| 29 | VDD | 30 | VDD |
| 31 | GND | 32 | GND |

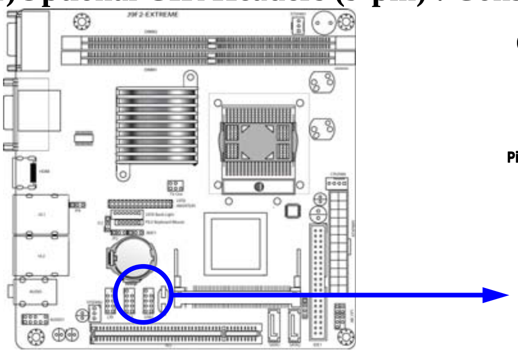
## (13) Pin-headers of LVDS Inverter: LVDS

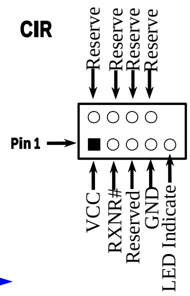


LVDS Inverter




## (14)Optional CIR Headers (9-pin) : Consumer IR-compliance pin-headers






CIR Headers

## 2-7 Starting Up Your Computer

1. After all connections are made, close your computer case cover.
2. Be sure all the switch are off, and check that the power supply input voltage is set to proper position, usually in-put voltage is 220V~240V or 110V~120V depending on your country's voltage used.
3. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.
4. Turn on your peripheral as following order:
   a. Your monitor.
   b. Other external peripheral (Printer, Scanner, External Modem etc…)
   c. Your system power. For ATX power supplies, you need to turn on the power supply and press the ATX power switch on the front side of the case.
5. The power LED on the front panel of the system case will light. The LED on the monitor may light up or switch between orange and green after the system is on. If it complies with green standards or if it is has a power standby feature. The system will then run power-on test. While the test is running, the BIOS will alarm beeps or additional message will appear on the screen.

   If you do not see any thing within 30 seconds from the time you turn on the power. The system may have failed on power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

| **Beep** | **Meaning** |
|---|---|
| One short beep when displaying logo | No error during POST |
| Long beeps in an endless loop | No DRAM install or detected |
| One long beep followed by three short beeps | Video card not found or video card memory bad |
| High frequency beeps when system is working | CPU overheated<br>System running at a lower frequency |

6. During power-on, press <Delete> key to enter BIOS setup. Follow the instructions in BIOS SETUP.
7. **Power off your computer:** You must first exit or shut down your operating system before switch off the power switch. For ATX power supply, you can press ATX power switching after exiting or shutting down your operating system. If you use Windows 9X, click **"Start"** button, click **"Shut down"** and then click **"Shut down the computer?"** The power supply should turn off after windows shut down.

# Chapter 3

# Introducing BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

In the BIOS Setup main menu of Figure 3-1, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press <Esc> to quit the BIOS Setup.
- Press ↑↓←→ (up, down, left, right) to choose, in the main menu, the option you want to confirm or to modify.
- Press <F10> when you have completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press Page Up/Page Down or +/– keys when you want to modify the BIOS parameters for the active option.

## 3-1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup.

If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

**Press <F1> to continue, <Ctrl-Alt-Esc> or <Del> to enter Setup**

## 3-2 Getting Help

### Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

### Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

## 3-3 The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 3-1) will appear on the screen. The Main Menu allows you to select from fourteen setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

**CMOS Setup Utility – Copyright(C) 1984-2004 Award Software**

| | |
|---|---|
| Standard CMOS Features | Load optimized Defaults |
| Advanced BIOS Features | Load Standard Defaults |
| Advanced Chipset Features | Set Supervisor Password |
| Integrated Peripherals | Set User Password |
| Power Management Setup | Save & Exit Setup |
| PnP/PCI Configurations | Exit Without Saving |
| PC Health Status | |
| Esc : Quit | ↑↓→← : Select Item |
| F10 : Save & Exit Setup | |
| Time, Date, Hard Disk Type... | |

**Figure 3-1**

**Standard CMOS Features**

Use this Menu for basic system configurations.

**Advanced BIOS Features**

Use this menu to set the Advanced Features available on your system.

**Advanced Chipset Features**

Use this menu to change the values in the chipset registers and optimize your system's performance.

**Integrated Peripherals**

Use this menu to specify your settings for integrated peripherals.

**Power Management Setup**

Use this menu to specify your settings for power management.

**PnP/PCI configurations**

This entry appears if your system supports PnP/PCI.

**PC Health Status**

This entry shows your PC health status.

**Load Optimized Defaults**

Use this menu to load the BIOS default values that are settings for optimal performances system operations.

**Load Standard Defaults**

Use this menu to load the BIOS default values that are factory settings for the stable performance system operation.

**Set Supervisor/User Password**

Use this menu to set User and Supervisor Passwords.

**Save & Exit Setup**

Save CMOS value changes to CMOS and exit setup.

**Exit Without Saving**

Abandon all CMOS value changes and exit setup.

## 3-4 Standard CMOS Features

The items in Standard CMOS Setup Menu are divided into several categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

**Phoenix – AwardBIOS CMOS Setup Utility**

**Standard CMOS Features**

```
  Date (mm:dd:yy)           Mon, Feb, 13 2006      |        Item Help
  Time (hh:mm:ss)           11 : 02 : 35           |
                                                   |----------------------------
> IDE Channel 0 Master       None                  |
> IDE Channel 0 Slave        None                  | Menu Level >
> IDE Channel 1 Master       None                  |
> IDE Channel 1 Slave        None                  | Change the day, month,
                                                   | year and century
  Drive A                  1.44M, 3.5 in.          |
  Video                    EGA/VGA                 |
  Halt On                  All Errors              |
                                                   |
  Base Memory                  640K                |
  Extended Memory            56320K                |
  Total Memory               57344K                |

 ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
      F5:Previous Values   F6:Optimized Defaults    F7:Standard Defaults
```

**Date**

The date format is <day><month><date><year>.

- **Day** Day of the week, from Sun to Sat, determined by BIOS. Read-only.
- **Month** The month from Jan. through Dec.
- **Date** The date from 1 to 31 can be keyed by numeric function keys.
- **Year** The year depends on the year of the BIOS.

**Time**

The time format is <hour><minute><second>.

**IDE Channel 0 Master / Channel 0 Slave / Channel 1 Master / Channel 1 Slave**

**SATA Channel 1, 2**

Press PgUp/<+> or PgDn/<–> to select Manual, None, Auto type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If the type of hard disk drives is not matched or listed, you can use Manual to define your own drive type manually.

If you select Manual, related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
If the controller of HDD interface is SCSI, the selection shall be "None".
If the controller of HDD interface is CD-ROM, the selection shall be "None"

**Access Mode** The settings are Auto Normal, Large, and LBA.
**Cylinder** number of cylinders
**Head** number of heads
**Precomp** write precomp
**Landing Zone** landing zone
**Sector** number of sectors

## 3-5 Advanced BIOS Features

Phoenix – AwardBIOS CMOS Setup Utility
Advanced BIOS Features

| | | Item Help |
|---|---|---|
| CPU Feature | Press Enter | |
| Hard Disk Boot Priority | Press Enter | |
| Virus Warning | Disabled | Menu Level > |
| CPU L1 & L2 Cache | Enabled | |
| CPU L3 Cache | Enabled | |
| Quick Power On Self Test | Enabled | |
| First Boot Device | Floppy | |
| Second Boot Device | Hard Disk | |
| Third Boot Device | CDROM | |
| Boot other Device | Enabled | |
| Boot Up NumLock Status | On | |
| Gate A20 Option | Fast | |
| Typematic Rate Setting | Disabled | |
| Typematic Rate (Chars/Sec) | 6 | |
| Typematic Delay (Msec) | 250 | |
| Security Option | Setup | |
| APIC Mode | Enabled | |
| MPS Version Control For OS | 1.4 | |
| OS Select For DRAM > 64MB | Non-OS2 | |
| HDD S.M.A.R.T Capability | Disabled | |
| Small logo (EPA)show | Disabled | |

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults

**Virus Warning**

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

**Disabled** (default) No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

**Enabled** Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

**CPU L1&L2 Cache**

The default value is Enabled.

**Enabled** (default)  Enable cache
**Disabled**  Disable cache

***Note:*** ***The*** **L1&L2** ***cache is built in the processor.***

**Hard Disk Boot Priority**

The selection is for you to choose the hard disk drives priorities to boot from.

**Quick Power On Self Test**

This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled. BIOS will shorten or skip some check items during POST.

**Enabled** (default)  Enable quick POST
**Disabled**  Normal POST

**First/Second/Third Boot Device**

The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The settings are Removable, Hard Disk, Legacy LAN, CDROM and Disabled.

**Boot Up Floppy Seek**

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

**Boot Up NumLock Status**

The default value is On.

**On** (default)  Keypad is numeric keys.
**Off**  Keypad is arrow keys.

**Gate A20 Option**

**Normal**  The A20 signal is controlled by keyboard controller or chipset hardware.
**Fast** (default)  The A20 signal is controlled by port 92 or chipset specific method.

**Typematic Rate Setting**

Keystrokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected. The settings are: Enabled/Disabled.

**Typematic Rate (Chars/Sec)**

Sets the number of times a second to repeat a keystroke when you hold the key down. The settings are: 6, 8, 10, 12, 15, 20, 24, and 30.

**Typematic Delay (Msec)**

Sets the delay time after the key is held down before is begins to repeat the keystroke. The settings are 250, 500, 750, and 1000.

**Security Option**

This category allows you to limit access to the system and Setup, or just to Setup.

**System**  The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
**Setup** (default)  The system will boot, but access to Setup will be denied if the correct password is not entered prompt.

**APIC MODE**

This field is used to enable or disable the APIC(Advanced Programmable Interrupt Controller). Due to compliance with PC2004 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQ resources for the system. Settings:[Enabled] and [disabled].

**MPS Version Control For OS**

This field allows you to select which MPS(Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, Consult the vendor of your operating system. Settings:[1.4],[1.1] .

**OS Select For DRAM > 64MB**

Allows OS2® to be used with >64MB or DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2.

**Small Logo (EPA) Show**

The selection is for you to choose the EPA small logo to show or not.

## 3-6 Advanced Chipset Features

The Advanced Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

```
              Phoenix – AwardBIOS CMOS Setup Utility
                   Advanced Chipset Features
   DRAM Timing Selectable           By SPD        |        Item Help
   CAS Latency Time                 Auto          |
   DRAM RAS to CAS Delay            Auto          |  Menu Level >
   DRAM RAS Precharge               Auto          |
   Precharge Delay(tRAS)            Auto          |
   SLP_S4# Asesertion Width         4 to 5 Sec.   |
   System BIOS Cacheable            Disabled      |
   Video BIOS Cacheable             Disabled      |
   Memory Hole at 15M-16M           Disabled      |
 > PCI Express Root Port Function   Press Enter   |
                                                  |
 ** VGA Setting **                                |
   PEG/Onchip VGA Control           Auto          |
   On-Chip Frame Buffer Size        8MB           |
   FIXED Memory Size                64MB          |
   DVMT Mode                        DVMT          |
   DVMT/F1XED Memory Size           128MB         |
   Boot Displaye                    Auto          |
    Panel Number                    1024x768      |
 ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
      F5:Previous Values   F6:Optimized Defaults   F7:Standard Defaults
```

**PCI Express Root Port Function**

Please refer to section 3-6-1

**System BIOS Cacheable**

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are: Enabled and Disabled.

**Video BIOS Cacheable**

Select Enabled allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are: Enabled and Disabled.

**Memory Hole At 15M-16M**

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements. The settings are: Enabled and Disabled.

**CAS # Latency**

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The settings are: Auto,3, 4 and 5.

**RAS-to-CAS Delay**

This field let's you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system. The settings are: 4T and 3T.

**RAS Precharge Time**

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain date. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system. The settings are: 2T and 3T.

## 3-6-1 PCI Express Root Port Function

**Phoenix – AwardBIOS CMOS Setup Utility**
**PCI Express Root Port Function**

| | | |
|---|---|---|
| PCI Express Port 1 | Auto | Item Help |
| PCI Express Port 2 | Auto | |
| PCI Express Port 3 | Auto | |
| PCI Express Port 4 | Auto | Menu Level >> |
| PCI Express Port 5 | Auto | |
| PCI Express Port 6 | Auto | |
| PCI Express Compliancy Mode | v1.0a | |

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults

## 3-7 Integrated Peripherals

**CMOS Setup Utility – Copyright(C) 1984-2004 Award Software**

**Integrated Peripherals**

| | | |
|---|---|---|
| > Onboard IDE Function | Press Enter | Item Help |
| > Onboard Device Function | Press Enter | |
| > Onboard Super IO Function | Press Enter | Menu Level > |

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults

**Onboard IDE Function**
Please refer to section 3-7-1

**Onboard Device Function**
Please refer to section 3-7-2

**Onboard Super IO Function**
Please refer to section 3-7-3

### 3-7-1 Onboard IDE Function

**Phoenix – AwardBIOS CMOS Setup Utility**

**Onboard IDE Function**

| | | |
|---|---|---|
| IDE HDD Block Mode | Enabled | Item Help |
| IDE DMA Transfer Access | Enabled | |
| On-Chip Primary PCI IDE | Enabled | Menu Level >> |
| IDE Primary Master PIO | Auto | |
| IDE Primary Slave PIO | Auto | |
| IDE Primary Master UDMA | Auto | |
| IDE Primary Slave UDMA | Auto | |
| IDE Secondary Master PIO | Auto | |
| IDE Secondary Slave PIO | Auto | |
| IDE Secondary Master UDMA | Auto | |
| IDE Secondary Slave UDMA | Auto | |
| *** On-Chip Serial ATA Setting **** | | |
| On-Chip Serial ATA | Auto | |
| PATA IDE Mode | Primary | |
| SATA Port | P2, P4 is Secondary | |
| SATA PORT Speed Settings | Disabled | |

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults

**OnChip Primary/Secondary PCI IDE**
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately. The settings are: Enabled and Disabled.

**IDE Primary/Secondary Master/Slave PIO**
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The settings are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

**IDE Primary/Secondary Master/Slave UDMA**

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33 and Ultra DMA/66, select Auto to enable BIOS support. The settings are: Auto, Disabled.

**IDE HDD Block Mode**

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support. The settings are: Enabled, Disabled.

## 3-7-2 Onboard Device Function

**Phoenix – AwardBIOS CMOS Setup Utility**

**Onboard Device Function**

| | | |
|---|---|---|
| USB Controller | Enabled | Item Help |
| USB2.0 Function | Enabled | |
| USB Keyboard Support | Disabled | |
| Azalia/Ac97' Audio Select | Auto | Menu Level >> |
| ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>F5:Previous Values F6:Optimized Defaults F7:Standard Defaults | | |

.

**USB Host Controller**

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB peripherals. The settings are: Enabled, Disabled.

**USB 2.0 Function**

This setting allows you to enable/disable the onboard USB controller. Selecting [Enabled] enables the system to support USB 2.0 spec. setting options:[Disabled],[Enabled].

**USB Keyboard Support**

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. The settings are: Enabled, Disabled.

**Azalia/AC97' Audio Select**

The selection for you to choose the embedded Audio function or 3rd party audio interface installed. The settings are: Enabled and Disabled.

## 3-7-3 Onboard Super IO Function

**Phoenix – AwardBIOS CMOS Setup Utility**

**Onboard Super IO Function**

| | | |
|---|---|---|
| Onboard Serial Port 1 | 3F8 | Item Help |
| Onboard Serial Port 1 USE IRQ | IRQ3 | |
| Onboard Serial Port 2 | 2F8 | |
| Onboard Serial Port 2 USE IRQ | IRQ4 | Menu Level >> |
| ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>F5:Previous Values F6:Optimized Defaults F7:Standard Defaults | | |

**Onboard Serial Port 1 / 2**

Select an address and corresponding interrupt for the serial ports. The settings are: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, and Auto.

# 3-8 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy saving while operating in a manner consistent with your own style of computer use.

```
                 Phoenix – AwardBIOS CMOS Setup Utility
                         Power Management Setup
   ACPI Function                 Enabled          |      Item Help
   ACPI Suspend Type             Enabled          |
   RUN VGA BIOS If S3 Resume      User Define     |
   Video off Method              V/H SYNC+Blank   |
   Video Off In Suspend           Yes             | Menu Level >
   Suspend Type                  Stop Grant       |
   Suspend Mode                  Disabled         |
   HDD Power Down                Disabled         |
   Soft-off by PWR-BTTN           Instant-off     |
   Wake-Up by PCI card            Disabled        |
   Resume by Alarm               Disabled         |
 X Date (of Month)Alarm           0               |
 X Time (hh:mm:ss)Alarm           0 : 0 :0        |
 > PM Timer Reload Events         Press Enter     |

  P  Reload Global Timer Events                   |
  Primary IDE 0              Disabled             |
  Primary IDE 1              Disabled             |
  Primary IDE 0              Disabled             |
  Primary IDE 1              Disabled             |
  FDD,COM,LPT Port           Disabled             |
  PCI PIRQ[A-D]#             Disabled             |
  ,
   ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
        F5:Previous Values   F6:Optimized Defaults   F7:Standard Defaults
```

**ACPI Function**

This item allows you to Enabled/Disabled the Advanced Configuration and Power Management (ACPI). The settings are Enabled and Disabled.

**Video Off in Suspend**

This determines the manner in which the monitor is blanked. The choice are Yes → Video will off , and No→ Video always On.

**Video Off Method**

This determines the manner in which the monitor is blanked.

| | |
|---|---|
| **DPMS** (default) | Initial display power management signaling. |
| **Blank Screen** | This option only writes blanks to the video buffer. |
| **V/H SYNC+Blank** | This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer. |

**Soft-off by PWR-BTTN**

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state. The settings are: Delay 4 Sec, Instant-Off.

**Power On by Ring**

During Disabled, the system will ignore any incoming call from the modem. During Enabled, the system will boot up if there’s an incoming call from modem.

**Date(of month) Alarm**

You can choose which month the system will boot up. Set to 0, to boot every day.

**Time(hh:mm:ss) Alarm**

You can choose what hour, minute and second the system will boot up.

**Note:**If you have change the setting, you must let the system boot up until it goes to the operating system, before this function will work

# 3-9 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

**CMOS Setup Utility – Copyright(C) 1984-2004 Award Software**

**PnP/PCI Configurations**

| | | |
|---|---|---|
| Init Display First | PCI Slot | Item Help |
| Reset Configuration Data | Disablsed | |
| x IRQ Resources | Press Enter | Menu Level > |
| PCI/VGA Palette Snoop | Disabled | |
| INT Pin 1 assignment | Auto | |
| INT Pin 2 assignment | Auto | |
| INT Pin 3 assignment | Auto | |
| INT Pin 4 assignment | Auto | |
| INT Pin 5 assignment | Auto | |
| INT Pin 6 assignment | Auto | |
| INT Pin 7 assignment | Auto | |
| INT Pin 8 assignment | Auto | |
| ** PCI Express relative items** | | |
| Maximum Payload Size | 4096 | |
| ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults | | |

**IRQ Resources**

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

Please refer to section 3-9-1

**PCI/VGA Palette Snoop**

Leave this field at *Disabled.* The settings are Enabled, Disabled.

# 3-10 PC Health Status

This section shows the Status of you CPU, Fan, Warning for overall system status. This is only available if there is Hardware Monitor onboard.

**Phoenix – AwardBIOS CMOS Setup Utility**

**PC Health Status**

| | | |
|---|---|---|
| Shutdown Temperature | Disabled | Item Help |
| Vcore | 4.88v | |
| Vcc | 4.88v | Menu Level > |
| VSB | 4.88v | |
| Voltage Battery | 1.77V | |
| Temperature 1 | 58°C | |
| Temperature 2 | 65°C | |
| Temperature 3 | 46°C | |
| FAN 1 | 0 RPM | |
| FAN 2 | 6172 RPM | |
| SFAN 3 | 0 RPM | |
| ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults | | |

**Shutdown Temperature**

This item can let users setting the Shutdown temperature, when CPU temperature over this

setting the system will auto shutdown to protect CPU.

**TemperatureCurrent /Vcore/ /VBAT(V)/VSB(V)**
This will show the System voltage chart and FAN Speed.

# 3-11 Load Standard/Optimized Defaults

**Load Standard Defaults**
When you press <Enter> on this item, you get confirmation dialog box with a message similar to:

Load Standard Defaults (Y/N)? N

Pressing <Y> loads the BIOS default values for the most stable, minimal-performance system operations.

**Load Optimized Defaults**
When you press <Enter> on this item, you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)? N

Pressing <Y> loads the default values that are factory settings for optimal performance system operations.

# 3-12 Set Supervisor/User Password

You can set either supervisor or user password, or both of them. The differences are:

**Supervisor password:** Can enter and change the options of the setup menus.

**User password:** Can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

**ENTER PASSWORD:**

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm that the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

**PASSWORD DISABLED.**

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.

# Chapter 4

## DRIVER & FREE PROGRAM INSTALLATION

Check your package and there is A MAGIC INSTALL CD included. This CD consists of all DRIVERS you need and some free application programs and utility programs. In addition, this CD also include an auto detect software which can tell you which hardware is installed, and which DRIVERS needed so that your system can function properly. We call this auto detect software MAGIC INSTALL.

### MAGIC INSTALL Supports WINDOWS 2000/XP

Insert CD into your CD-ROM drive and the MAGIC INSTALL Menu should appear as below. If the menu does not appear, double-click MY COMPUTER / double-click CD-ROM drive or click START / click RUN / type X:\SETUP.EXE (assuming X is your CD-ROM drive).

**The Intel 945GM Express Chipset driver only of Windows 2000 & Windows XP**




**From MAGIC INSTALL MENU you may make 10 selections:**

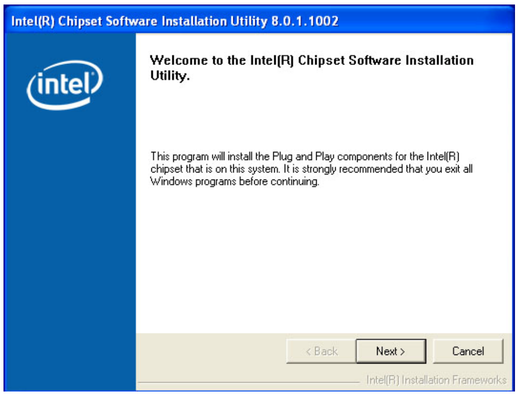
1. INF install Intel 945 chipset system driver
2. VGA install Intel 945GM VGA driver
3. SOUND install Realtek ALC888 AC97 Codec Audio Driver
4. LAN install Realtek RTL8111B Ethernet NIC Driver
5. PC-HEALTH install MyGuard Hardware Doctor Utility
6. PC-CILLIN install PC-CILLIN 2006-Anti-Virus Program
7. USB2.0 install USB 2.0 driver
8. BROWSE CD to browse the contents of the CD
9. EXIT to exit from MAGIC INSTALL menu

** Please ignore the installation of 945GM chipset INF file under Microsoft Vista Operation System.

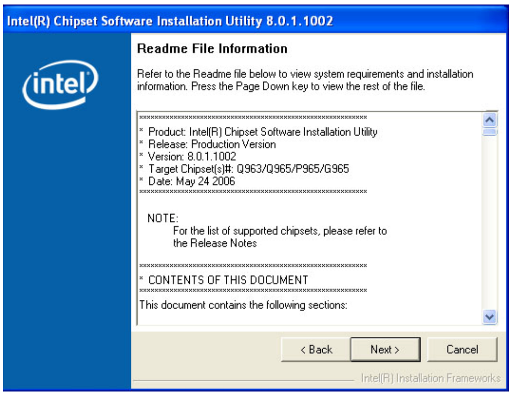
## 4-1 INF  Install Intel 945GM chipset system driver



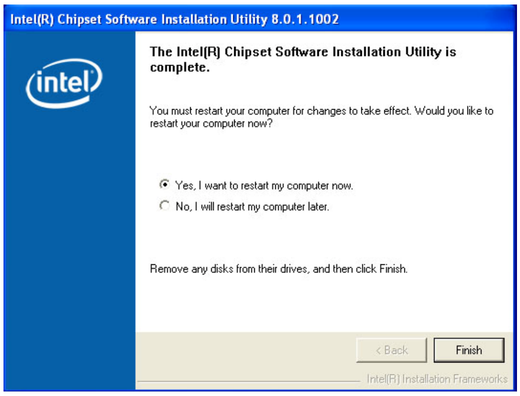

1. Click INF of the MAGIC INSTALL MENU




2. Click NEXT when Chipset Software Install Utility appears




3. This license agreement appear, click Yes, the readme information appear, click Next

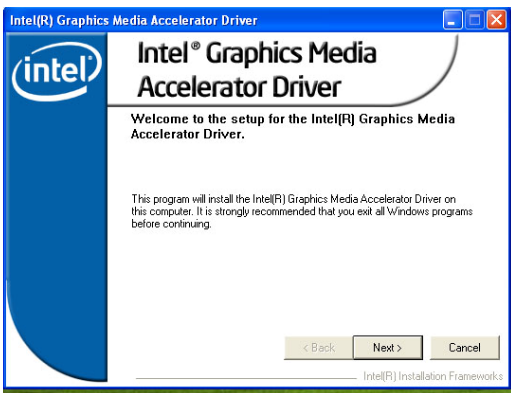



4. Select if you want computer re-started click Finish

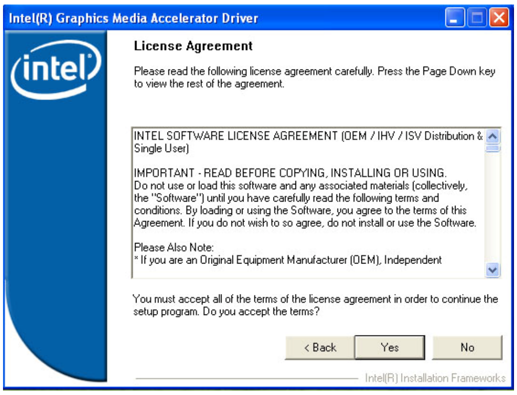
## 4-2 VGA  Install Intel 945GM VGA Driver



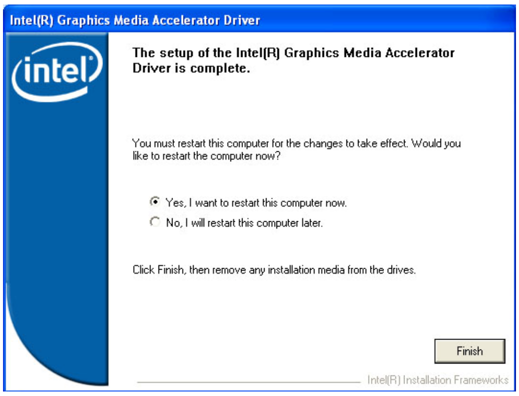

1. Click VGA when MAGIC INSTALL MENU appears




2. Click NEXT When Intel (R) Graphics Media Accelerator Driver Software Setup appear




3. Click "YES" for Copy Right Announcement




4. Click "FINISH" to reboot your PC

## 4-3 SOUND    Install REALTEK ALC888 Codec Audio Driver




1. Click SOUND when MAGIC INSTALL MENU appears




2. Click NEXT When Realtek High Definition Audio driver windows appear




3. Click FINISH and restart your computer




4. Manual Sound Effect Setting







5. Speaker configuration setting

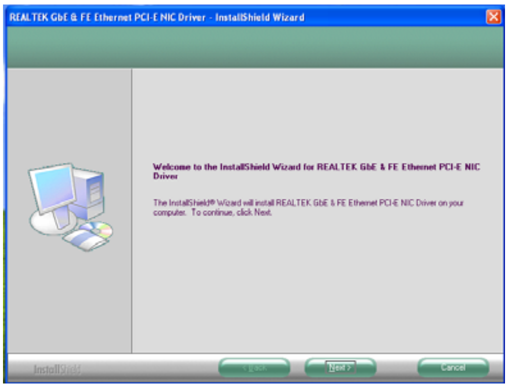
6. SPDIF out setting

**NOTE: Please upgrade your Windows XP to Service Pack 1 / Windows 2000 to Service Pack 4 or later before you the HD Audio CODEC driver.**

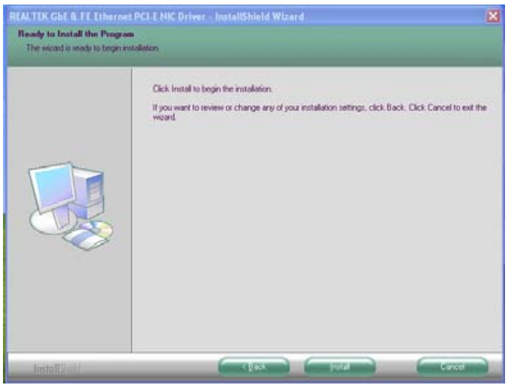
## 4-4 LAN Install Realtek RTL8111B Ethernet NIC Driver



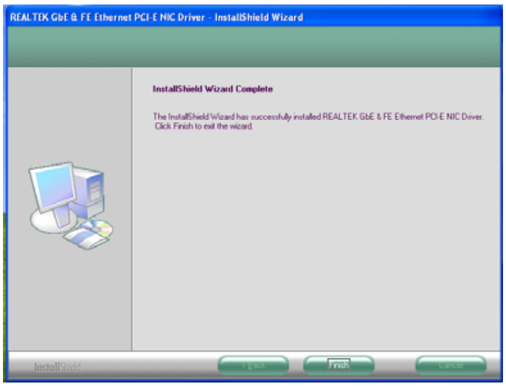

1. Click LAN when Magic Install Menu appear



2. Click Next to install Realtek LAN driver



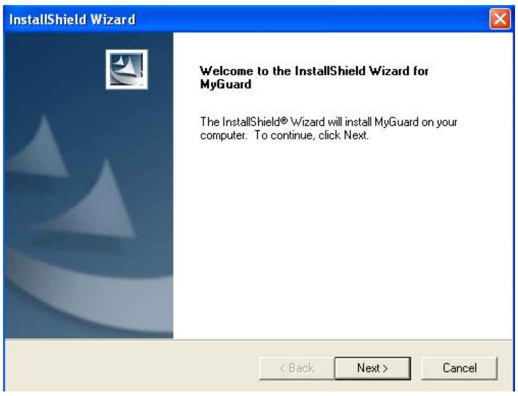
3. Please Accept the license agreement and read the “Readme” file for detailed information , then click Next to proceed.



4. Click Install to install driver and Click Finish end the installation

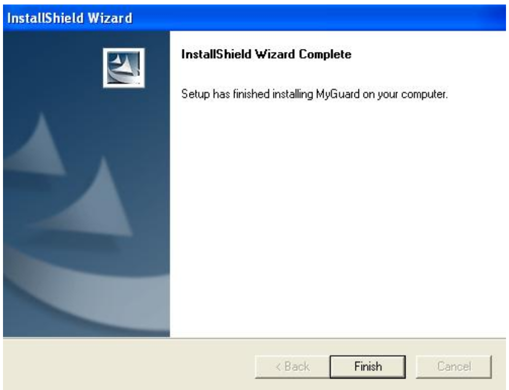
## 4-5 PC-HEALTH Install MyGuard Hardware monitor Utility




1. Click PC-HEALTH when MAGIC INSTALL MENU appears
2. Click Next when Install shield wizard Window appears, Choose destination location and click Next, when the start copy file windows appear,

click next







3. Select Finish after setup complete

4. Execute MY GUARD utility, On-time Monitoring your system health

**NOTE:**

**MAGIC INSTALL will auto detect file path X:\NFORCE4\MYGUARD\SETUP.EXE**

## 4-6 USB2.0 Install Intel USB2.0 DRIVER

**Windows 2000 OS**

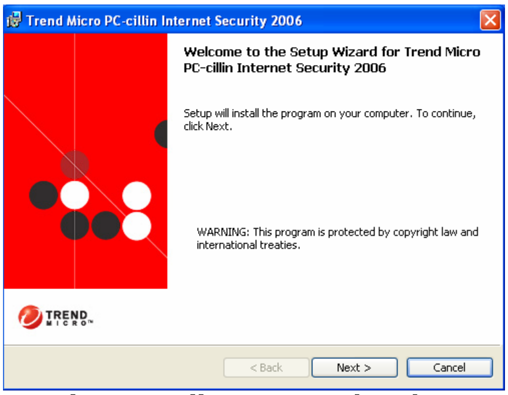
Please install Windows 2000 service pack 4 or later .

**Windows XP OS**

Please install Windows XP service pack 1 or later .

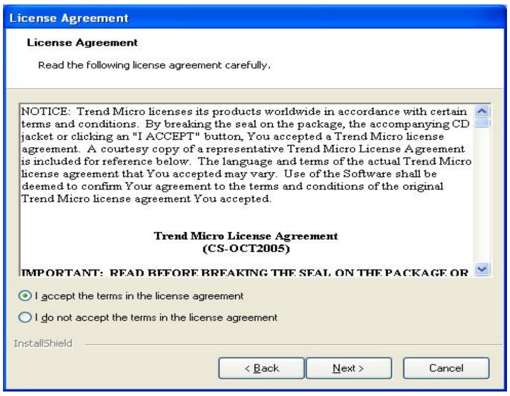
## 4-7 PC-CILLIN Install PC-CILLIN 2006 Anti-virus program



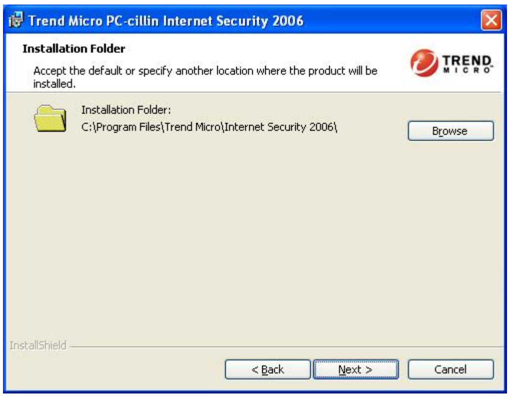




1. Click PC-CILLIN when MAGIC INSTALL MENU appears

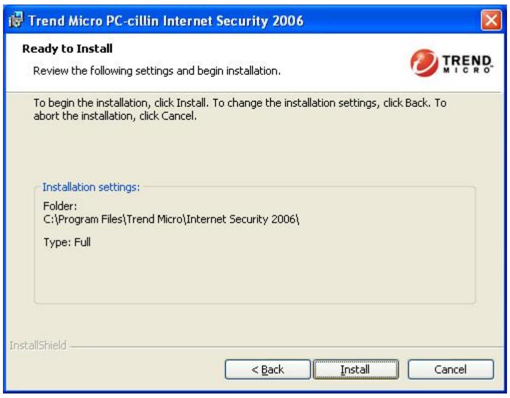
2. Select "Install program" when the "Trend Micro internet security" windows appears



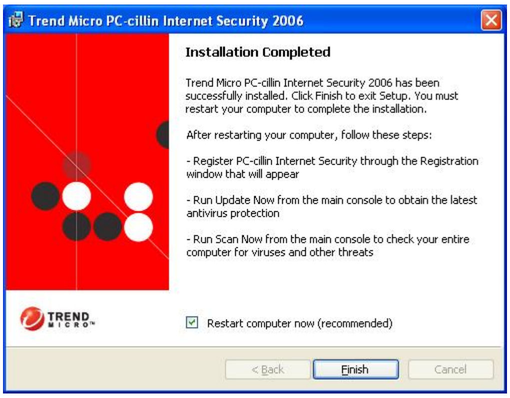

3. This is license agreement, select "I Accept the terms" and Click NEXT




4. Click NEXT or choose Change to change the path for the file to be stored




5. Click INSTALL, Start to install the software




Setup Complete and click FINISH

**Note : Please install ACROBAT READER for reading PC-CILLIN 2006 User Manual which locates at the path "X:\acrobat\adberdr6_enu_full.exe".**

## 4-8 HOW TO UPDATE BIOS

**Make sure the BIOS upgrade utility of Rev.8.80 or above employed for updating your BIOS.

**STEP 1.** Prepare a boot disc. (You may make one by click START click RUN type SYS A: click OK)

**STEP 2.** Copy the utility program to your boot disc. You may copy from DRIVER CD X:\FLASH\AWDFLASH.EXE or download from our web site.

**STEP 3.** Copy the latest BIOS for 945GM from our web site to your boot disc.

**STEP 4.** Insert your boot disc into A:,
Start the computer, type "Awdflash A:\945GM.BIN /SN/PY/"
945GMX Axxx.BIN is the file name of latest BIOS it can be 945GMXX A03.BIN or 945GMXX CPB02.BIN

| | | |
|---|---|---|
| SN | means | don't save existing BIOS data |
| PY | means | renew existing BIOS data |
| CC | means | clear existing CMOS data |
| R | means | restart computer |

**STEP 5.** Press ENTER and the BIOS will be updated, computer will be restarted automatically.

# 4-9 Pro Magic Plus Function Introduction

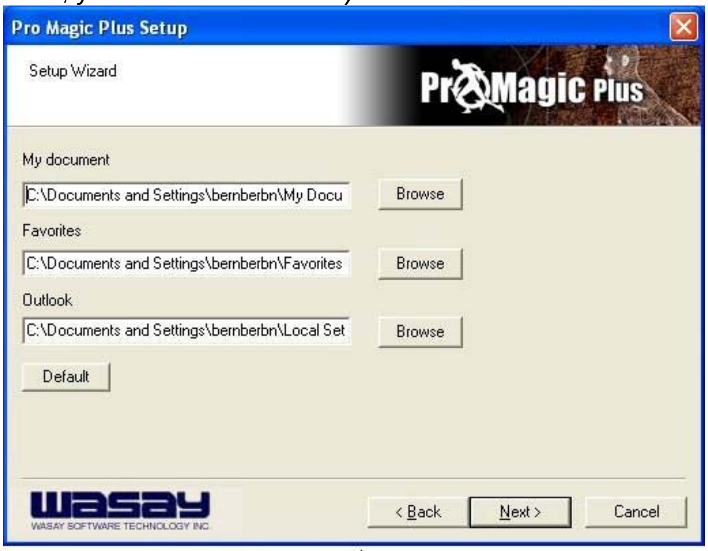
## What's Pro Magic Plus?

Tired with reinstall OS each time when it doesn't work? Does your computer often crash down or unable to work after installed new software? Have you had great loses and troubles because of computer problems? Still using time-consuming backup software that occupies lots of HD space?

Pro Magic Plus- an instant system recovery software tailored to solve these problems for you. It combines various application tools (e.g. anti-virus, backup software, uninstall software, multi-boot software) to satisfy your needs of all sorts of system protections.

## What functions does Pro Magic Plus have?

1. **Instant System Restoration** – Regardless of mis-operation or system crash, install Pro Magic Plus beforehand would allow you to instantly restore your system back by simply reboot your computer.
2. **Easy-to-use** – Auto installation from CD ROM; Supports Mouse
3. **System Uninstall** – Pro Magic provides a protection mode, which allows user to freely test any software. If user does not want to keep the software, just reboot the computer to restore back to the previous state, and Pro Magic will remove it completely from you computer.
4. **Password Security** – Pro Magic provides double password protection, including user password for entering each OS and manager password for managing 'Pro Magic', which can effectively prevent others from using your computer without permission or data from being stolen. (disable item for OEM version)
5. **Complete Protection** – Pro Magic not only protects the system disk, but also can protect your data disk, and does not require to reboot when backup or restore data disk.
6. **Multipoint Save/Restore** – You can backup your system whenever you need and restore them back to anytime you wish, 1 hour, 1 day or 1 month ago. Restore points are unlimited. (disable item for OEM version)
7. **Data Disk Protection** – Pro Magic Plus now comes with data disk protection, provides complete protection for your computer! (disable item for OEM version)
8. **You can choose to change the default path of 'My Document', 'My Favorite' and 'Outlook Express'**, so that when you are restoring the system, data in these folders will not be restored as well. (This is optional, you can leave it as it is).




graph 4

**NOTE:** Functions of each version will differ from each other, and will be based on the function descriptions of each version.

## System Requirements

- ◇ First OS must be Windows 98 SE/ME/2000/XP
- ◇ Support Only Windows OS (No Linux)
- ◇ Windows server OS and Windows NT not supported

◇ Minimum of Intel 486 or above, 16MB of memory or above
◇ Minimum of 500MB free/usable space or above
◇ Support for SCSI & SATA Hard disk

*Pro Magic Plus only supports SCSI hard disk with Windows 2000 or OS above*

### Notice Before Installation

1. Before install Pro Magic Plus, turn off all anti-virus software. (Include BIOS anti-virus function)
2. Pro Magic Plus does not support multiple PRI partitions. If you have multiple PRI partitions, please repartition your HD before installation.
3. If your HDD is not fully partitioned (with un-partitioned/unused space at end of HDD), please repartition the HDD before install Pro Magic Plus.

# 4-10 The Installation of CPU and Active Thermal Kit

This board provides Socket 479m for Intel mobility processor and offer optional active thermal kit of copper made to prevent CPU overheating problems. According to the following guide will ensure your installation correctly.



1. Remove the socket protection shield and prepare for the CPU installation.



2.Install the Socket 479m compatible processor gentlely and carefully.



3. Revolve the screw with the screwdriver.



4.Make sure the installation right on position

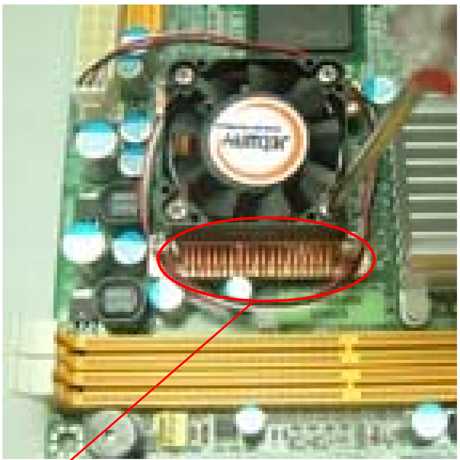




5. Install the back-plant of the thermal kit.

6. Put the thermo kit direct to the back-plant





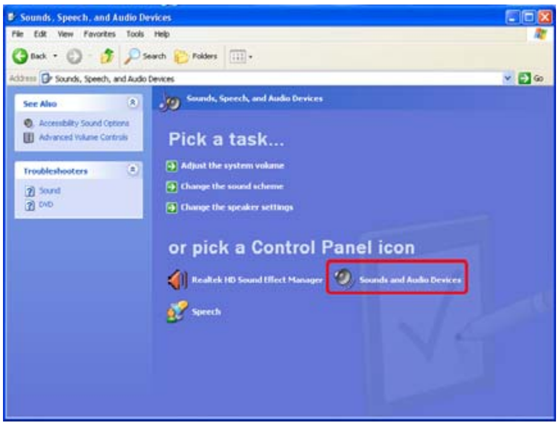
7. Make sure the double-side of thermal kit is tight on the point.

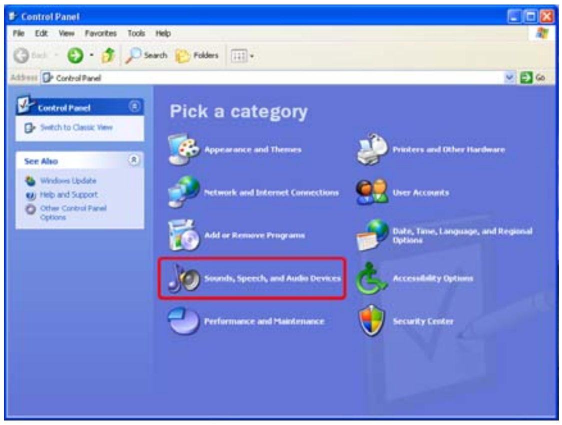
8. Make sure four screws are fastened with sound of click. Then it's done.

**Make sure that the side of copper-fin towards to the Memory DIMMs to avoid the interference between the active thermo kit and components of motherboards.

***The Intel mobility processor will be embedded with boxed thermal kit in some retail packages. This motherboard may not be compatible with all kinds of active thermo kit. Please contact with your dealer for advanced information.

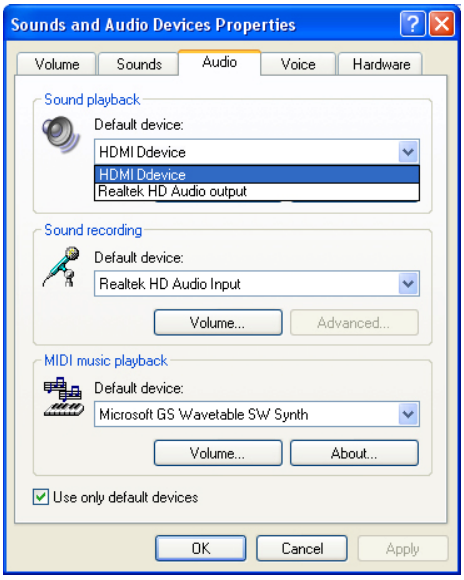
# 4-11 How to set up HDMI audio output




1. Press ‘Start”, then get into “Control Panel” and choose the selection, “Sounds, Speech, and Audio Devices”

2. Press “Sounds and Audio Devices”



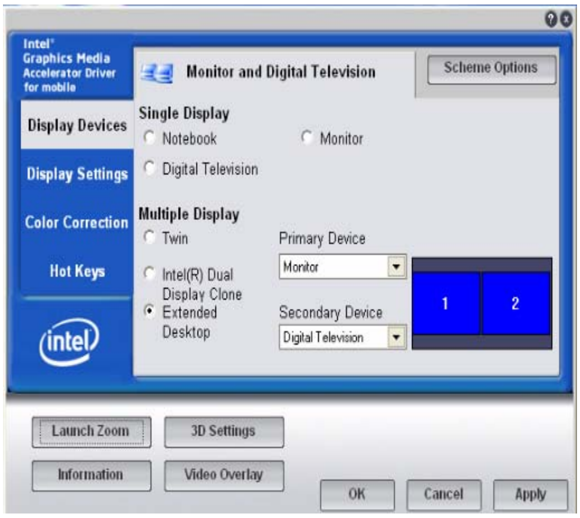

3. Select “Voice” and choose “HDMI Device” as your “Default devices”.

# 4-12 The Installation of HDTV & HDMI Signal Outputs

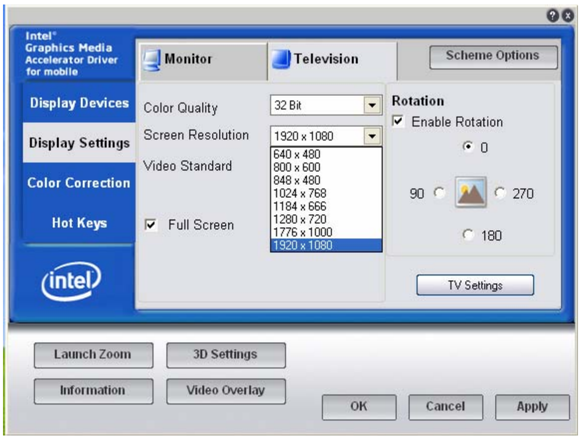
Choose the appropriate Screen Resolution for the high definition films. Follow the instructions to play.



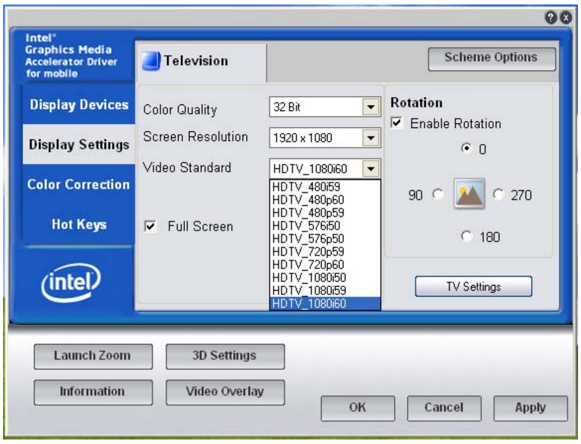

1. Click the "Graphics Properties" on the icon in the taskbar.




2. Select "Display Devices"




3. Choose appropriate resolution of the "Display Devices" you just selected.




4. Select "Video Standard" for the high definition films you want to play.

## 4-13 The motherboard Installation of Standard Chassis

Before you install the motherboard into the chassis, you should install the CPU and its active thermo kit and Mini-PCI Express Card first if it's necessary. And prepare with the screws and space-support holders (P/N: G09-FIX9F2-F).



1. Choose the adequate chassis.



2. Set the F04-137-F I/O shield to the side of the chassis.



3. Put the space-support holders on the four pillars.



4.Make sure to fasten the screws through the motherboard to the pillars.

**The space-support holder is only for standard chassis; please do not use it to double-side components mounted compatible chassis. Or it may cause interference of some components of this motherboard.

***The board ( 17 cm x 17 cm) is designed to be compatible with genetic micro-ATX chassis or a SFF chassis. This motherboard will ship with optional active thermo kit and IGP chipset thermal solutions assembled.

The minimum thermal requirement for genetic Micro-ATX chassis is to ensure adequate motherboard/component-level cooling by equipping the chassis with at least a real fan exhausting airflow out of chassis.

The optional active thermo kit and IGP chipset thermal solutions were designed and validated

based on a worse-case (cheapest with minimum feature) micro-ATX chassis (thus we need not specify minimum airflow requirement for system fan). Additional inputs on chassis requirements are in next section. The thermal analysis is based on a worse-case configuration chassis with no side /front venting and one rear fan. This configuration should be sufficient to cover the envelope of available micro-ATX chassis in the market.
Additional chassis features, such as ACG1.1 (or side-venting), front-fan and front -venting, can be included for better system thermal. These are recommended but not mandatory.

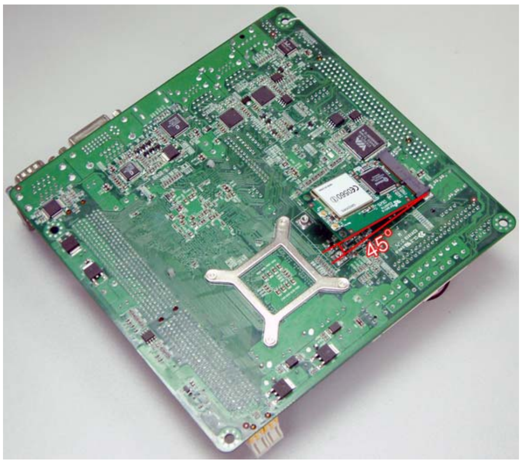
## 4-14 Optional PCI Express Card Installation Guide



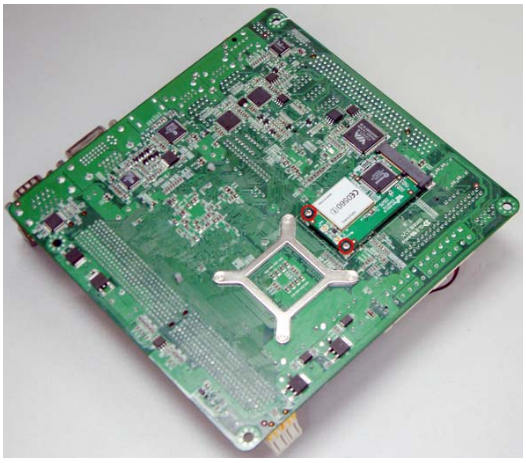
1. Loose two screws in the two rivets.



2.Ready to fasten the screws after installed Mini-PCI Express x1 compatible card.



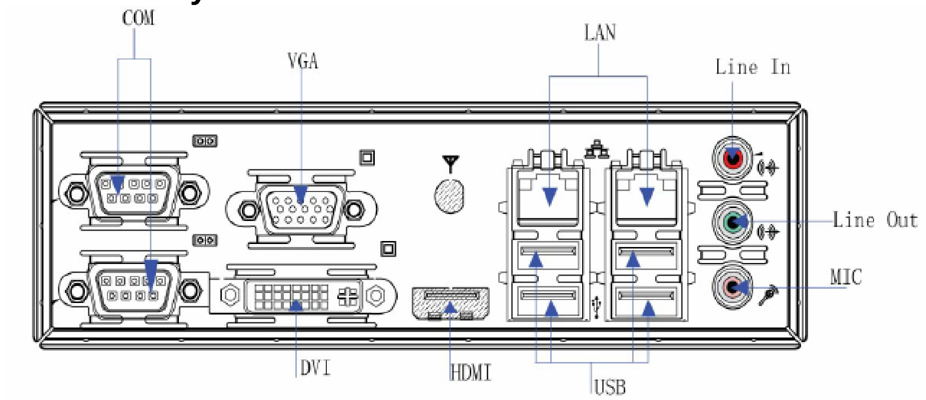

3. Plug in the Mini-PCI Express Interface Card at the angle of 45-degree.



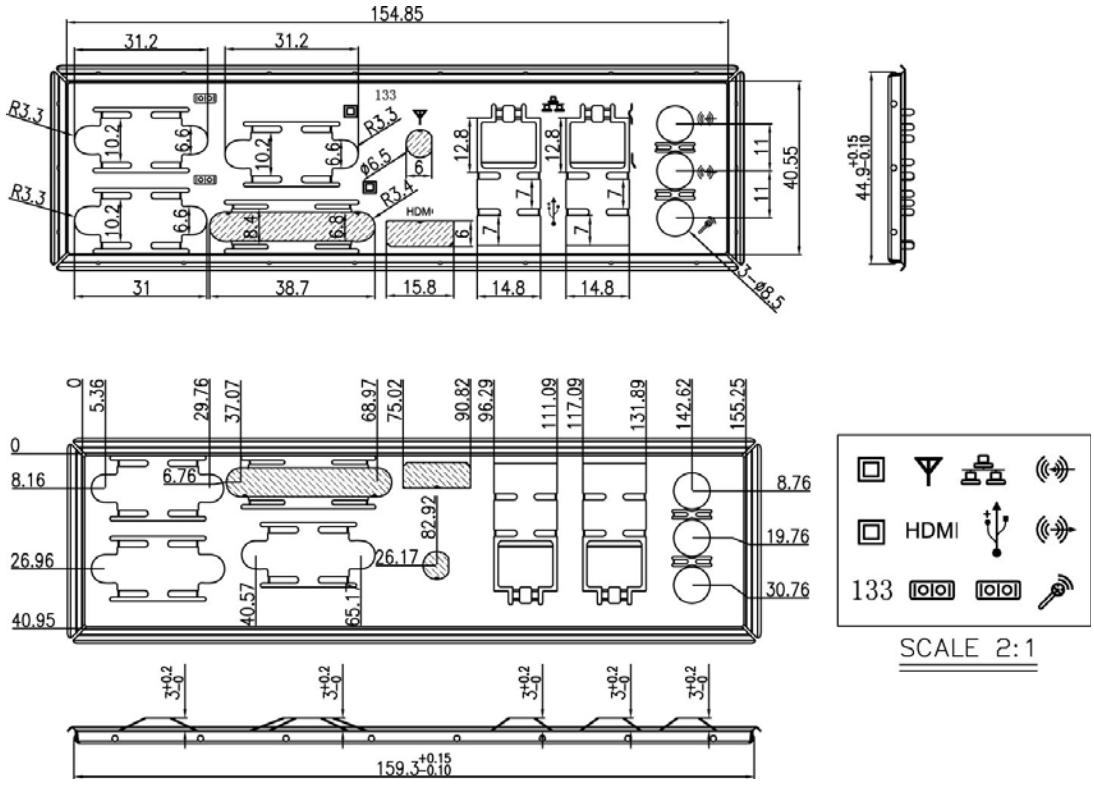
4.Press down the Card and make sure fasten the screw well.

# Appendix

## 1. Real I/O Bracket Layout

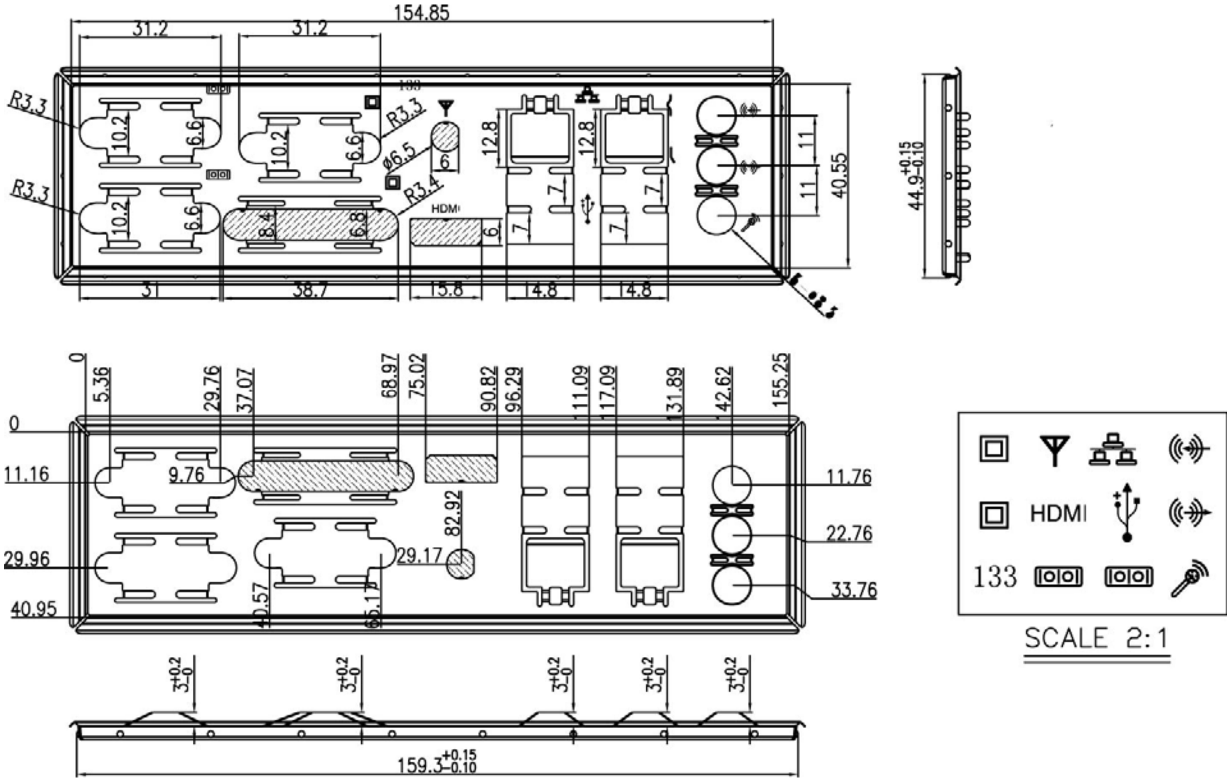



## 2. Rear I/O Bracket for Double-Side Mounted Motherboard Compatible Chassis P/N: F04-133-F




**Please make sure the standard connectors are employed for the rear I/O of this motherboard.

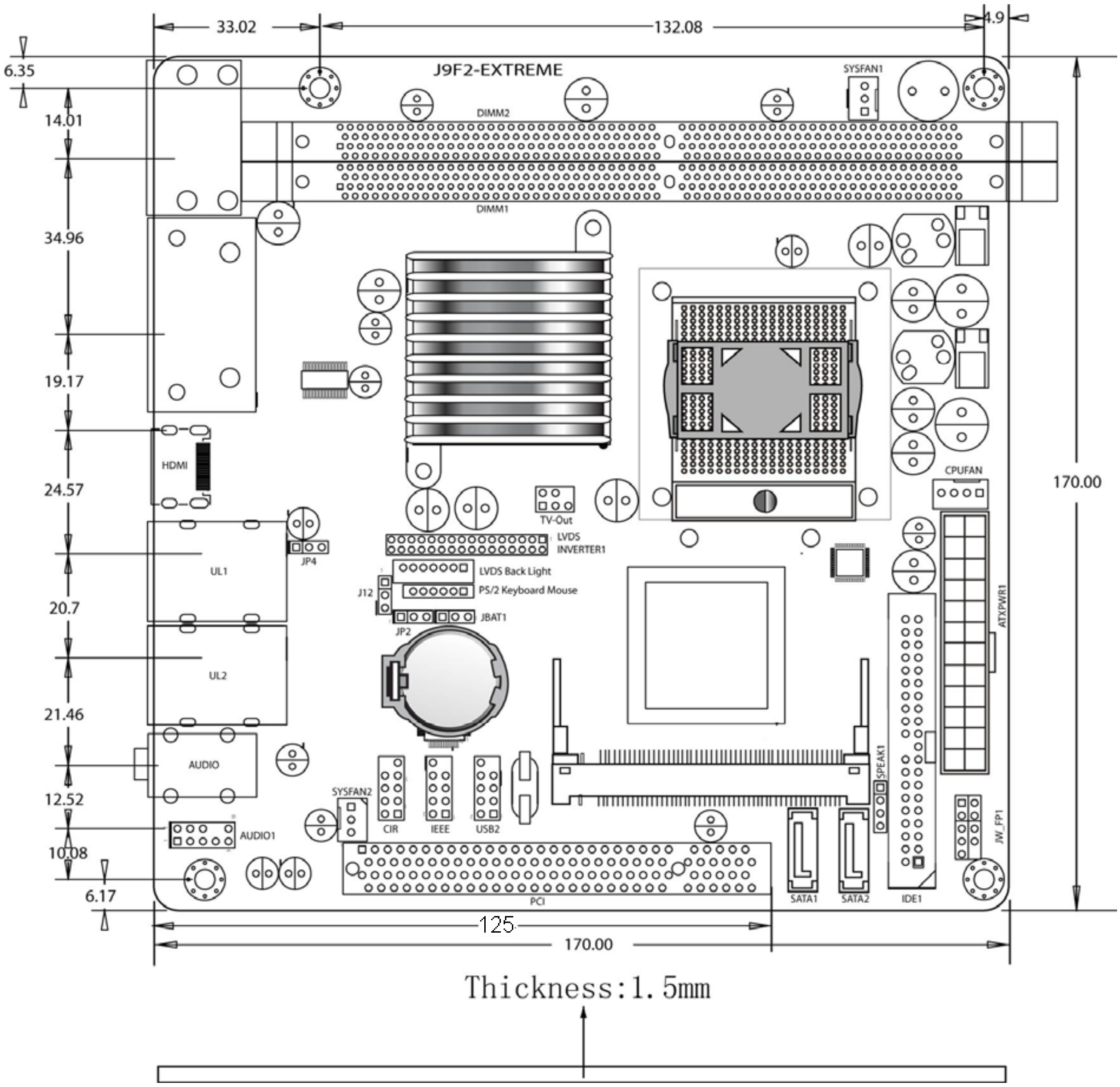
## 3. Rear I/O Bracket for Standard Chassis (P/N: F03-137-F)




**Please make sure the standard connectors are employed for the rear I/O of this motherboard.

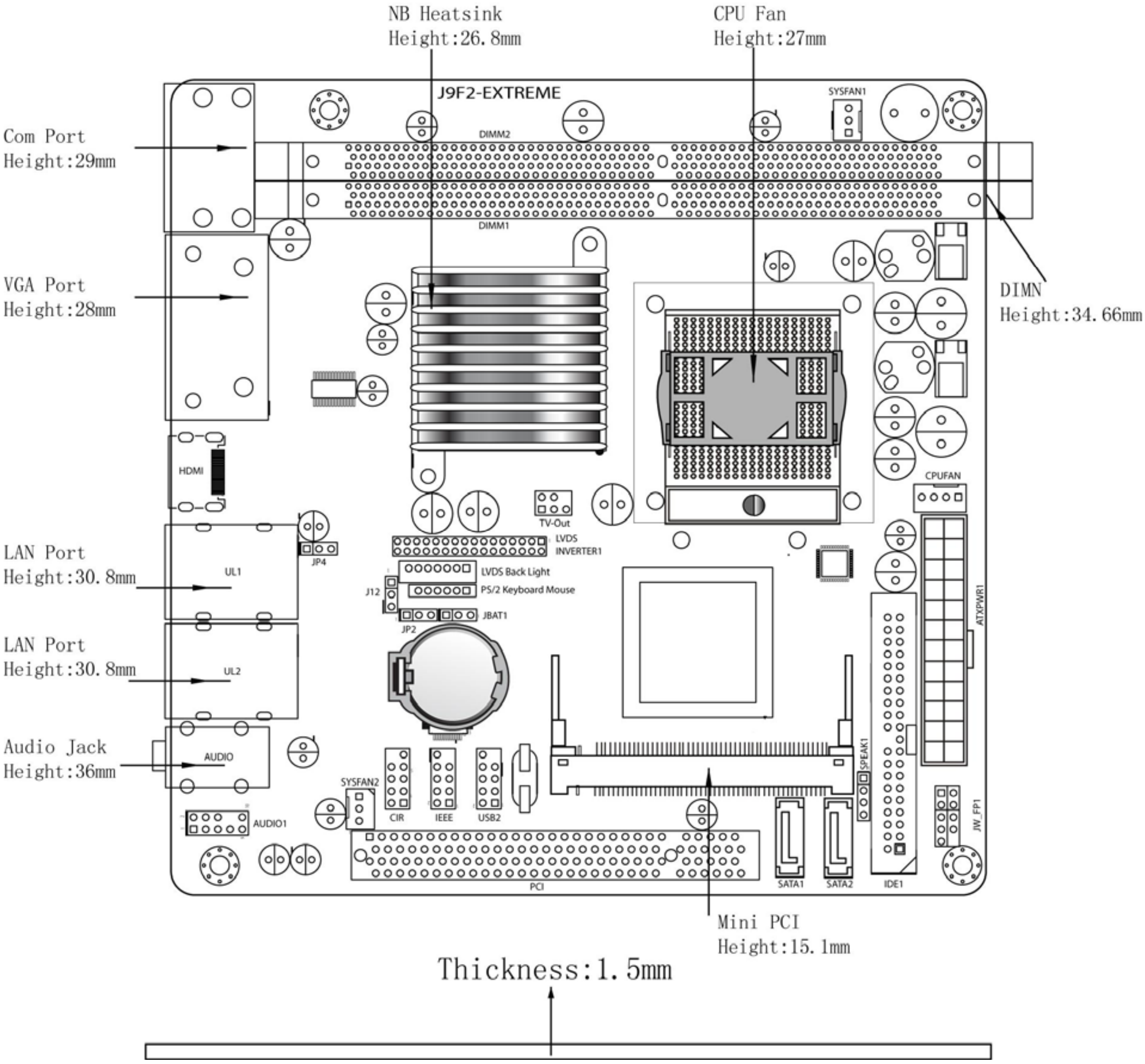
**Please make sure the standard cable is employed for the rear I/O. Or it may cause the interference of the I/O shield.

## 4. Motherboard Dimensions

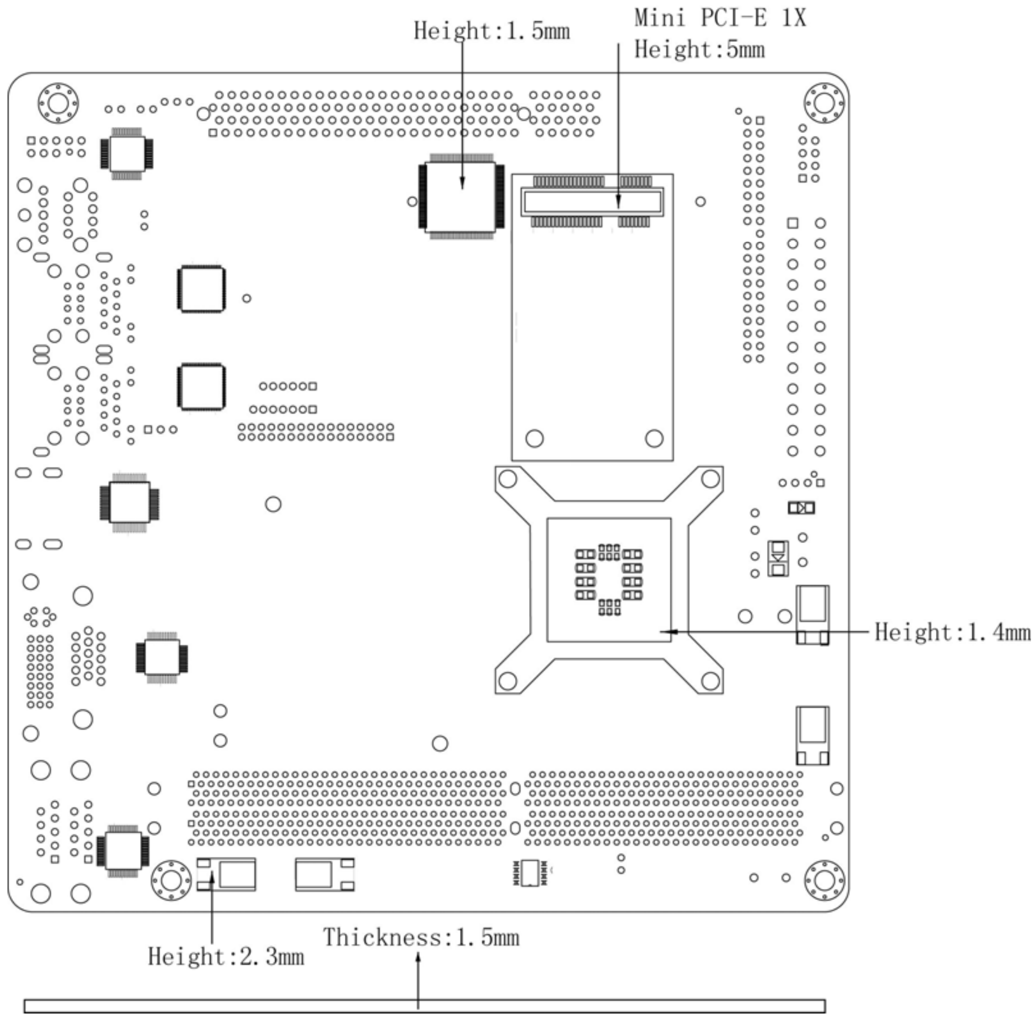



**For highly integrated all the features of this motherboard, we can not avoid that some problems of interference occur in some particular situation. Please note that if you need to utilize PCI cards, make sure that the length of them will be limited in 125 mm with the bracket. And if you need the PCI riser card for standard chassis with this motherboard installed under the space-support holders, please contact with your reseller.

## 5. Motherboard Height Distribution of Processor Installation Side



## Motherboard Height Distribution of Mini-PCI Express Installation Side

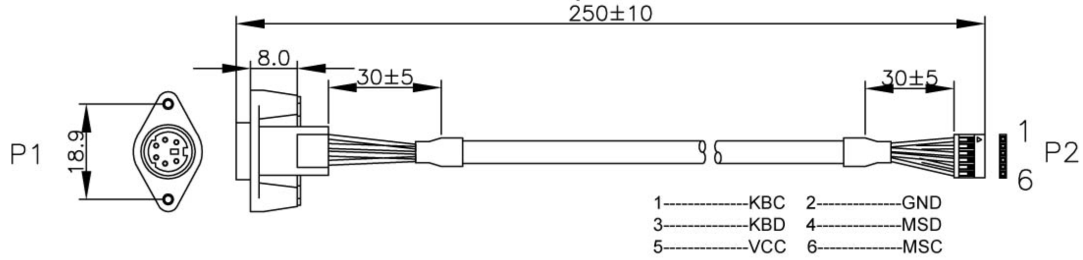


## 6. Optional PS/2 Cable & HDTV-OUT Pin-Definition

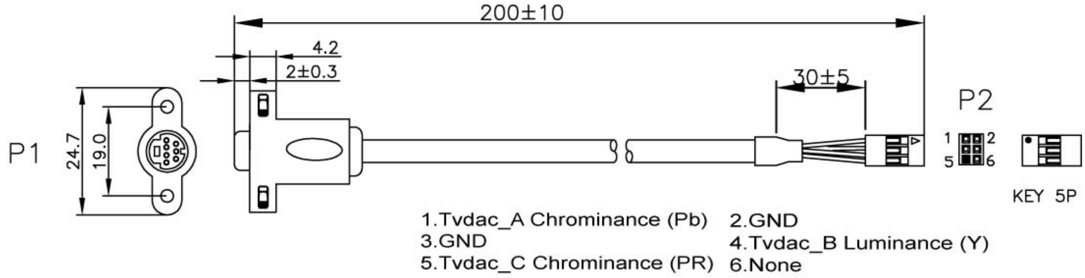
**(P/N: G01-SP2-2X3P-F)**

**(P/N: G01-SVIDEO-2x3PF)**

PS/2 Cable pin-Detinition

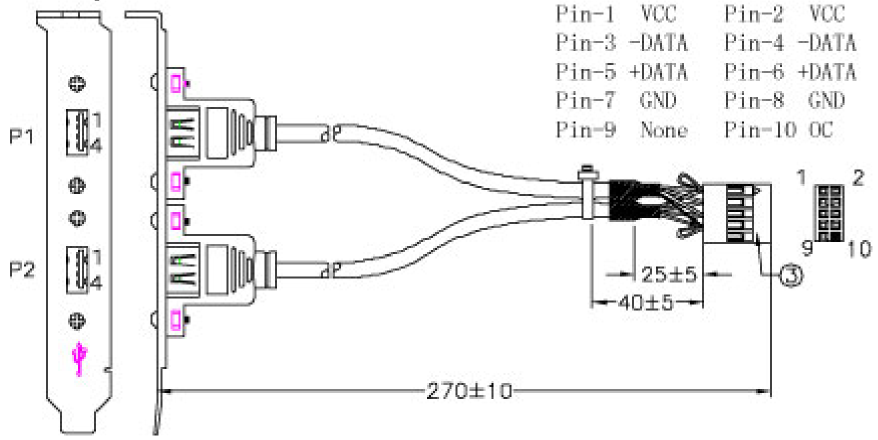



HDTV Signal Ouput Pin-Detinition



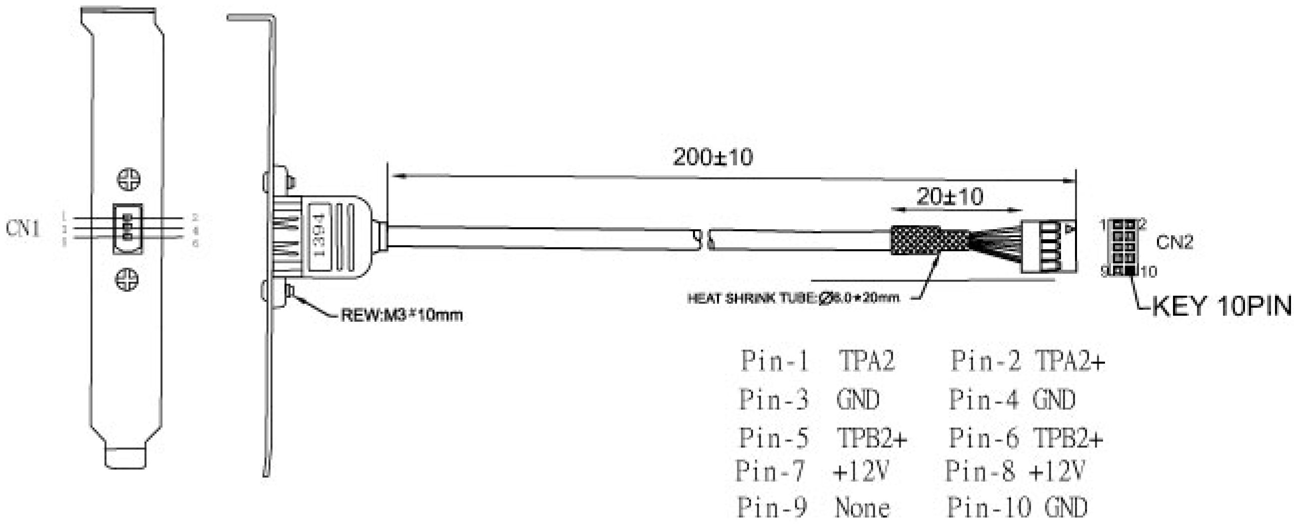

## 7. Optional USB Cable Pin-Definition

**(P/N: G01-USB2A-F)**

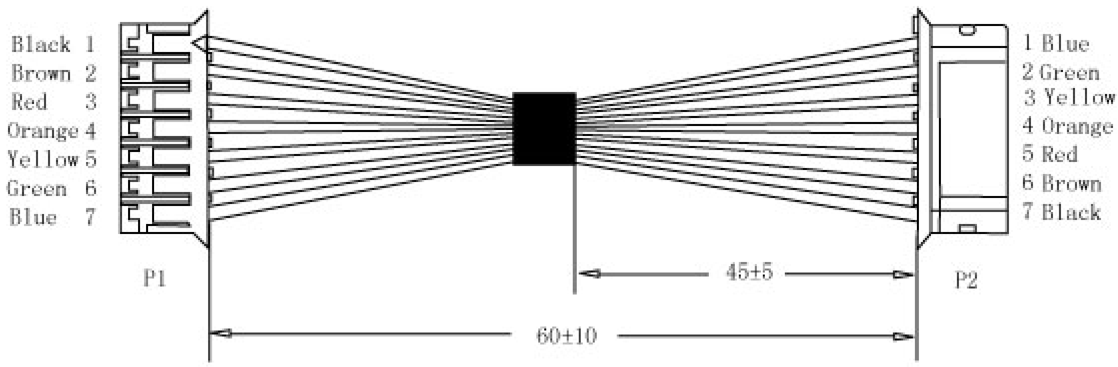



***All the cables will be optional; you can refer to the reseller for further information.

## 8. Optional IEEE1394 Pin-Definition
(P/N: G01-1394-1P-F)



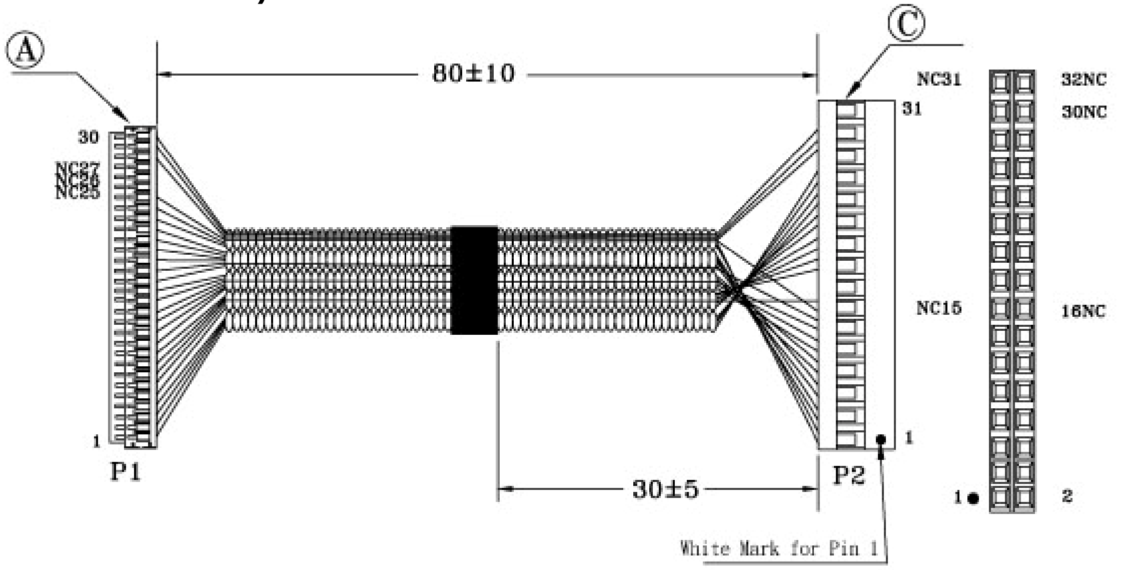

## 9. Optional LVDS Inverter Cable for LVDS Pin-Definition
(P/N: LCESIV004-F)




| PIN NUMBER | FUNCTION |
|---|---|
| 1, 2 | VIN |
| 346 | GND |
| 5 | ON/OFF CONTROL |
| 7 | DIMMING CONTROL |

** The Inverter cable and LVDS cable are optional for LVDS panel. Please contact with your reseller for further information.

## 9. Optional LVDS-Cable Pin-Definition of Quanta 17” Pannel (P/N: LCESCBP04-F)




| P1 | COLOR | | P2 |
|---|---|---|---|
| A-30 | Orange | | C-29 |
| A-29 | Orange | | C-28 |
| A-28 | Orange | | C-27 |
| A-27 | NC | | |
| A-26 | NC | | |
| A-25 | NC | | |
| A-24 | Orange | | C-13 |
| A-23 | White | Twisted | C-2 |
| A-22 | Green | | C-1 |
| A-21 | White | Twisted | C-4 |
| A-20 | Green | | C-3 |
| A-19 | White | Twisted | C-6 |
| A-18 | Green | | C-5 |
| A-17 | Orange | | C-12 |
| A-16 | White | Twisted | C-8 |
| A-15 | Green | | C-7 |
| A-14 | Orange | | C-11 |
| A-13 | White | Twisted | C-10 |
| A-12 | Green | | C-9 |
| A-11 | White | Twisted | C-17 |
| A-10 | Green | | C-18 |
| A-9 | White | Twisted | C-19 |
| A-8 | Green | | C-20 |
| A-7 | Orange | | C-14 |
| A-6 | White | Twisted | C-21 |
| A-5 | Green | | C-22 |
| A-4 | White | Twisted | C-23 |
| A-3 | Green | | C-24 |
| A-2 | White | Twisted | C-25 |
| A-1 | Green | | C-26 |
| P1 | COLOR | | P2 |

**Interface Cable Pin Assignments**

| Pin No. | Symbol | Function |
|---|---|---|
| 1 | R1IN0- | Receiver signal of Odd side pixels (-) |
| 2 | R1IN0+ | Receiver signal of Odd side pixels (+) |
| 3 | R1IN1- | Receiver signal of Odd side pixels (-) |
| 4 | R1IN1+ | Receiver signal of Odd side pixels (+) |
| 5 | R1IN2- | Receiver signal of Odd side pixels (-) |
| 6 | R1IN2+ | Receiver signal of Odd side pixels (+) |
| 7 | GND | |
| 8 | CK1IN- | Clock signal of Odd side pixels (-) |
| 9 | CK1IN+ | Clock signal of Odd side pixels (+) |
| 10 | R1IN3- | Receiver signal of Odd side pixels (-) |
| 11 | R1IN3+ | Receiver signal of Odd side pixels (+) |
| 12 | R2IN0- | Receiver signal of Even side pixels (-) |
| 13 | R2IN0+ | Receiver signal of Even side pixels (+) |
| 14 | GND | |
| 15 | R2IN1- | Receiver signal of Even side pixels (-) |
| 16 | R2IN1+ | Receiver signal of Even side pixels (+) |
| 17 | GND | |
| 18 | R2IN2- | Receiver signal of Even side pixels (-) |
| 19 | R2IN2+ | Receiver signal of Even side pixels (+) |
| 20 | CK2IN- | Clock signal of Even side pixels (-) |
| 21 | CK2IN+ | Clock signal of Even side pixels (+) |
| 22 | R2IN3- | Receiver signal of Even side pixels (-) |
| 23 | R2IN3+ | Receiver signal of Even side pixels (+) |
| 24 | GND | |
| 25 | GND | |
| 26 | NC | |
| 27 | GND | |
| 28 | $V_{DD}$ | +5V power supply |
| 29 | $V_{DD}$ | +5V power supply |
| 30 | $V_{DD}$ | +5V power supply |

## 11. How to test with the HDTV and HDMI compatible high definition movies?

I. HDTV

A. Choose 720p / 1080i / 1080p displaying compatible LCD TV.
B. Prepare with 720p / 1080i /1080p demo films to play
C. Press "Ctrl" + "Alt" + "F4" to activate the Intel Graphics Program.
D. To select the adequate resolution for playing the films of 720p / 1080i /1080p
E. Then play films in full screen mode. The film will play smoothly.

II. HDMI

A. Choose 720p / 1080i / 1080p displaying compatible LCD TV with HDCP Certificate Key and HDMI connector.
B. Prepare with 720p / 1080i /1080p demo films to play.
C. Press "Ctrl" + "Alt" + "F4" to activate the Intel Graphics Program. And Set up the HDMI Audio as your Default Sound devices.
D. To select the adequate resolution for playing the films of 720p / 1080i /1080p.
E. Then play films in fu screen mode. The film will play smoothly.

Hot Keys for switching D-sub or DVI embedded display to HDMI compatible display is "Ctrl"+"Alt"+"F4" while your HDMI compatible display shows no video signals input. Some other display switching Hot Keys are as below:

### VGA

| | |
|---|---|
| Enable Monitor | Ctrl+Alt+F1 |
| Enable Notebook | Ctrl+Alt+F3 |
| Enable/Disable Panel Fitting | Ctrl+Alt+F11 |
| Open Graphic Property Application | Ctrl+Alt+F12 |
| Rotate to Normal | Ctrl+Alt+UP |
| Static Device Defecting | Ctrl+Alt+F8 |

### DVI

| | |
|---|---|
| Enable Notebook | Ctrl+Alt+F3 |
| Enable Digital TV | Ctrl+Alt+F4 |
| Enable/Disable Panel Fitting | Ctrl+Alt+F11 |
| Open Graphic Property Application | Ctrl+Alt+F12 |
| Rotate to Normal | Ctrl+Alt+UP |
| Rotate 90 degrees | Ctrl+Alt+LEFT |
| Rotate 180 degrees | Ctrl+Alt+DOWN |
| Rotate 270 degrees | Ctrl+Alt+RIGHT |

### HDMI

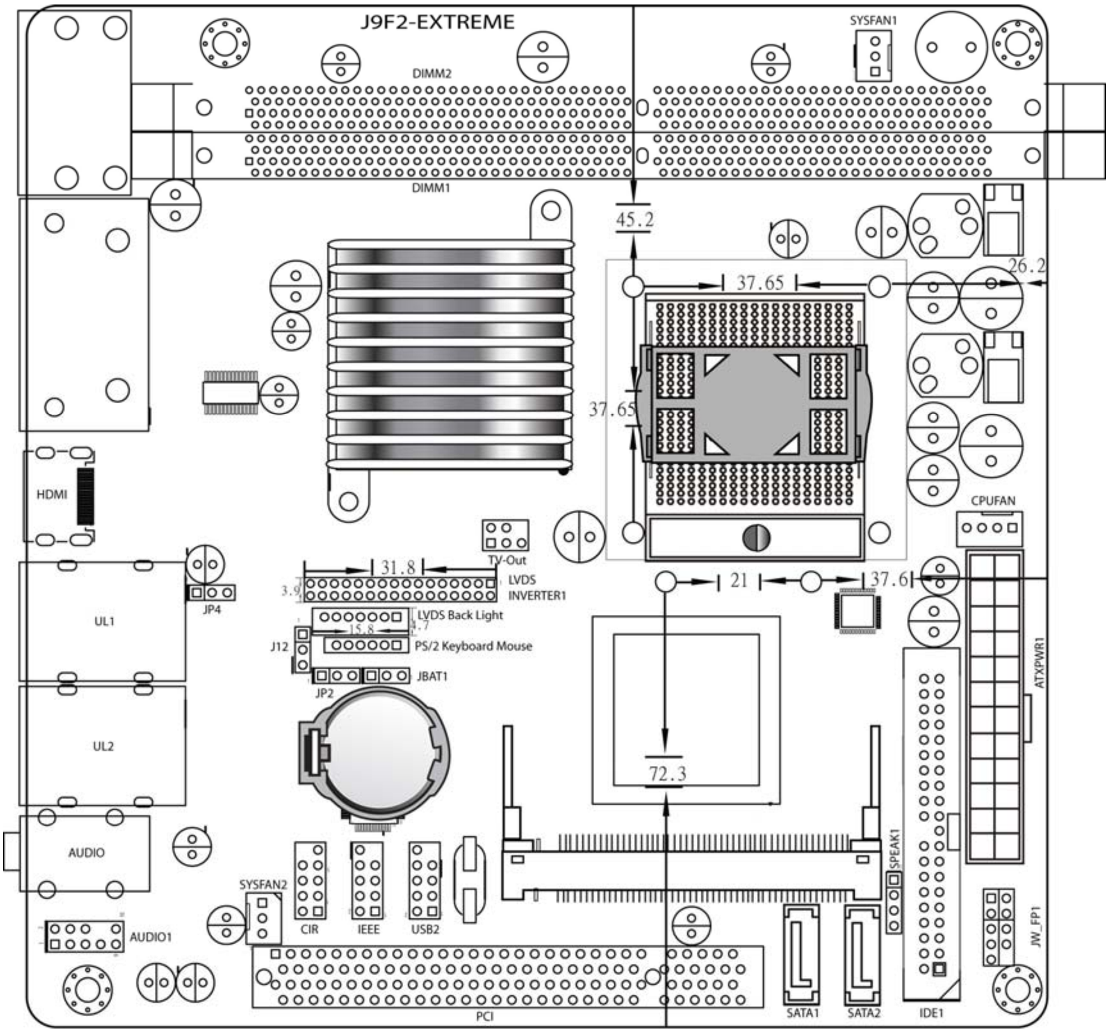
| | |
|---|---|
| Enable Digital TV | Ctrl+Alt+F4 |
| Enable/Disable Panel Application | Ctrl+Alt+F11 |
| Rotate to Normal | Ctrl+Alt+UP |
| Rotate 90 degrees | Ctrl+Alt+LEFT |
| Rotate 180 degrees | Ctrl+Alt+DOWN |
| Rotate 270 degrees | Ctrl+Alt+RIGHT |

### HDTV

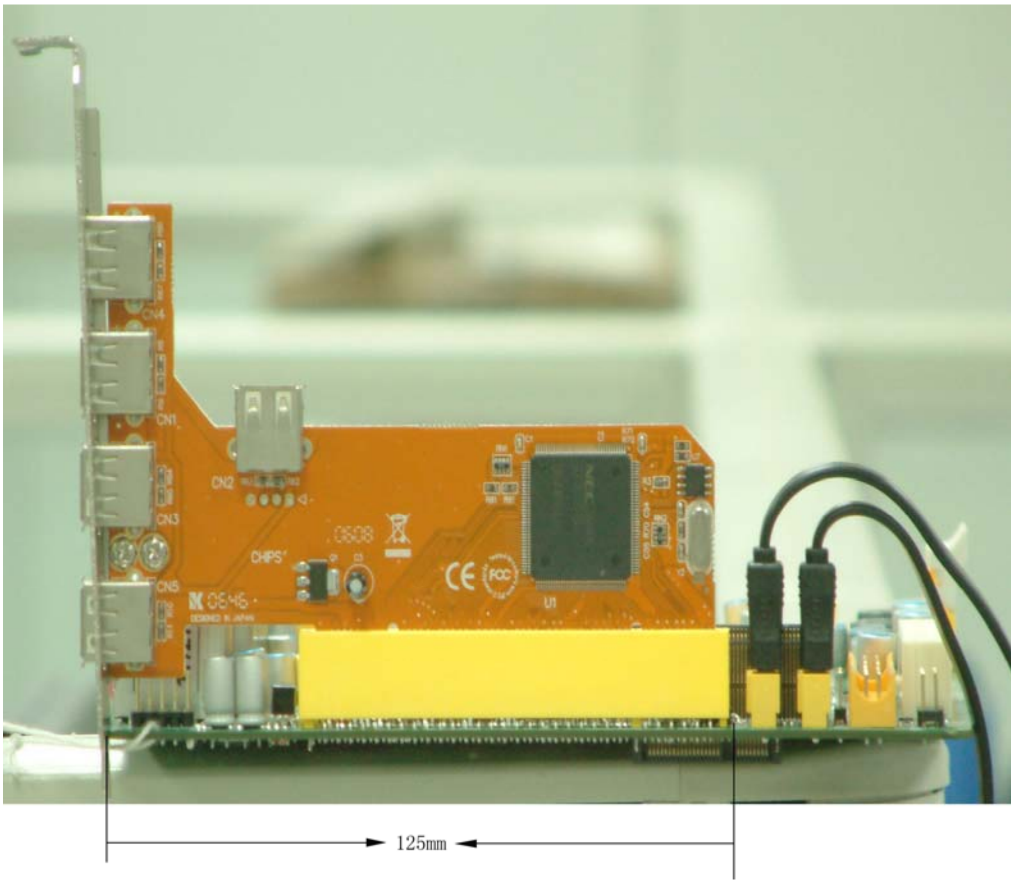
| | |
|---|---|
| Enable Monitor | Ctrl+Alt+F1 |
| Enable TV | Ctrl+Alt+F2 |
| Enable Notebook | Ctrl+Alt+F3 |
| Enable/Disable Panel Application | Ctrl+Alt+F11 |
| Open Graphic Property Application | Ctrl+Alt+F12 |
| Rotate to Normal | Ctrl+Alt+UP |
| Rotate 90 degrees | Ctrl+Alt+LEFT |
| Rotate 180 degrees | Ctrl+Alt+DOWN |
| Rotate 270 degrees | Ctrl+Alt+RIGHT |
| Static Device Defecting | Ctrl+Alt+F8 |

***For more information about the Intel Graphics Property Application, please come to visit HTTP://www.jetway.com.tw

## 12. LVDS and Thermal Kit Dimensions



## 13. The Limitation of PCI Card Installation




**For highly integrated all the features of this motherboard, we can not avoid that some problems of interference occur in some particular situation. Please note that if you need to utilize PCI cards, make sure that the length of them will be limited in 125 mm with the bracket. And if you need the PCI riser card for standard chassis with this motherboard installed under the space-support holders, please contact with your reseller.